SITE INSPECTION WORKSHEET

CERCLIS IDENTIFICATION NUMBER
MO0000093682

SITE LOCATION

SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE
Mound Street PCB Site (part of the Laclede Coal Gas Site MO981715980)

STREET ADDRESS, ROUTE, OR SPECIFIC LOCATION IDENTIFICATION
North on Broadway from Broadway Street exit off Interstate 64 or south on Broadway from the Salisbury Street exit off Interstate 70, to Mullanphy Street, turn east on Mullanphy then turn left onto a gravel roadway just past the Apex Oil facility on the left. Take the gravel roadway north to Mound Street. The site is encompassed by Mound Street, the gravel roadway, and the Petroleum, Fuel and Terminal-Apex Oil Facility (PFT-Apex Oil).

CITY	STATE	ZIP CODE	TELEPHONE
St. Louis	MO	63102	N/A

COORDINATES: LATITUDE & LONGITUDE	TOWNSHIP, RANGE, AND SECTION
38° 38' 34.0" N Lat., 90° 10' 57.2" W Long.	T45N, R7E, Section

OWNER/OPERATOR IDENTIFICATION

OWNER	OPERATOR
McKinley Iron (Contact: Herman Gellman)	McKinley Iron (Contact: Herman Gellman)
OWNER ADDRESS	**OPERATOR ADDRESS**
3620 North Hall Street	3620 North Hall Street
CITY	**CITY**
St. Louis	St. Louis

STATE	ZIP CODE	TELEPHONE	STATE	ZIP CODE	TELEPHONE
MO	63147	(314) 231-6077	MO	63147	(314) 231-6077

SITE EVALUATION

AGENCY/ORGANIZATION	EPA REGION
Sverdrup Corporation	VII
INVESTIGATOR	
Michael W. McCurdy, CHMM	
CONTACT	**EPA CONTACT**
Michael W. McCurdy, CHMM	Dr. Pete Culver, PE
ADDRESS	**ADDRESS**
4400 College Blvd., Suite 160	726 Minnesota Avenue
CITY	**CITY**
Overland Park	Kansas City

STATE	ZIP CODE	TELEPHONE	STATE	ZIP CODE	TELEPHONE
KS	66211	(913) 663-2101	KS	66101	(913) 551-7707

GENERAL INFORMATION

Site Description and Operational History: Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, and disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

The Mound Street PCB Site is part of the Laclede Coal Gas Site (MOD981715980). The Laclede Coal Gas Site also includes the PFT-Apex Oil facility located west and south of the Mound Street PCB Site. The total area of the Mound Street PCB Site is estimated at approximately 1.5 acres (References 15 and 22). The buildings on the site were demolished in 1991, and the property currently has no structures upon it. The property is owned by McKinley Iron, Inc. located at 3620 North Hall Street, St. Louis, Missouri. Mr Gellman was interviewed during the site reconnaissance. He did not know if the basement walls and floor were removed during building demolition. He did state that the basement area was probably filled with demolition debris. He was not aware of any unusual observations made, such as stained soil or odors, during the building demolition. He estimated the basement depth to be between 12 and 14 feet. Mr. Gellman stated the property was originally purchased from Union Electric to salvage power plant equipment. The site is roughly rectangular in shape and is bordered on three sides by industrial property. Gravel roads are located along the property perimeter, with Mound Street being the northern boundary. An east-west dirt path has been made across the property. No fencing or other barrier exists around the property. Bricks, rock, wood, metal, brush, and concrete debris are located on the southern portion of the property. Several small soil piles were observed along the southeastern edge of the property. Two 55-gallon drums were also observed adjacent to the debris. The contents of the drums are unknown. The northern portion is overgrown with grass and weeds and other vegetation. The general surface runoff is toward the east and south. To the east is vacant property with railroad tracks, the concrete flood wall, and then the Mississippi River (Reference 22).

The St. Louis Metropolitan Sewer District (MSD), Brooklyn Street pump station is located approximately 575 feet north-northeast of the site. The pump station is located on the west side of the flood wall. Two wells sampled in 1991 by E&E/FIT and three manholes sampled by MSD in 1993 were identified. An abandoned pump house, once part of the Mound Street Power Plant, is located on the east side of the flood wall. The abandoned pump house is in poor condition. At the time of the site reconnaissance visit, the water level of the Mississippi River was at the bottom of the pump house. The abandoned pump house was deeded to the City of St. Louis for the construction of a bike path along the river (Reference 22).

The site is part of the Laclede Gas and Light Company former manufactured gas plant (FMGP), which operated in the late 1800s to the mid-1940s. Laclede Gas used a retort process for coal carbonization in the generation of gas. Approximately 930 million gallons of coal tar waste were produced at this facility. It is estimated that approximately 76 percent of the waste was sold, with the remaining 24 percent being buried on-site (Reference 4). This equates to approximately 224 million gallons of coal tar waste potentially buried at the site. On-site burial was typically conducted in unlined pits. In 1940, operations were split between Laclede Gas Light Company (Laclede Gas) and Laclede Power and Light Company (Laclede Electric) (References 3 and 4). In 1945, Union Electric (UE) purchased the entire coal gas facility and operated the Mound Street Power Plant from 1945 to 1973. UE did not manufacture coal gas at this site. In 1969, the Apex Oil Company purchased the former coal gas works (Laclede Gas) from UE. UE, however, continued to operate its electrical facility from the former Laclede Electric works. The Apex Oil Company utilized the site as a tank farm for the storage of petroleum fuels until the mid-1980s, when it became an asphalt product terminal (References 3 and 4). The PFT-Apex Oil facility is currently still operating at this location. In 1973, the UE property (Laclede Electric works) was transferred to the Tenlis Company. Tenlis dismantled the power generation and transmission equipment. Transformer oil was reportedly disposed by Midwest Oil Company. The dismantled equipment was sold as scrap metal (Reference 4). In 1981, Tenlis transferred the property to AZCON (Reference 3). The operations of AZCON are unknown; however, it was reported in the MDNR PA report that AZCON could have been a metal recycling company (Reference 15). In 1985, Mound Street Corporation became the property owner and leased the building to an individual for an electric motor stripping operation (Reference 3). An oil fire occurred in the basement of the building in 1989, and the building was demolished in the spring of 1991 (Reference 15). McKinley Iron became the owner of the property in 1993 (Reference 15). The property does not have any buildings or other structures, and is currently vacant (References 7 and 22).

References: 3, 4, 7, 15, 22

The Mound Street PCB Site has had numerous investigations conducted since 1976.

- The U.S. Coast Guard investigated oil slicks in the Mississippi River, in the vicinity of the Mound Street PCB Site, three times between 1976 to 1987. The oil slicks were reportedly originating from the Mound Street Power Plant. The basement of the Mound Street Power Plant was the suspected source of oil; however, no specific source was identified. No samples were collected during any of the Coast Guard investigations (References 3 and 4).

- The St. Louis City Division of Health conducted an investigation of the Mound Street Power Plant on April 8, 1987. Six oil samples were collected from the basement of the Mound Street building and analyzed for PCBs. No PCB contamination was identified; however, detection limits were not recorded (References 3 and 4).

- The The Ecology and Environment/Field Investigation Team (E&E/FIT) submitted a PA report of the Mound Street Power Plant Site on June 23, 1988 (Reference 4). The field activities were conducted on September 17, 1987. Six oil, water and oil/water mixture samples were collected from the Mound Street building basement and two from manholes in Mound Street during the PA site reconnaissance. The samples were analyzed for PCBs. No PCB contamination was detected at a 1 mg/kg detection limit in any of the samples. The source of oil in the basement of the Mound Street Power Plant building (Mound Street PCB Site) was potentially identified as the adjacent PFT-Apex Oil terminal. It was stated in the report that PFT-Apex Oil had numerous spills, some of which entered the Mound Street building basement. Transformers and hydraulic oil tanks, located in the Mound Street building basement, were supposedly drained and removed in the 1970s; however, no records confirming the proper disposal of oil were available.

- The E&E/FIT conducted a site reconnaissance of the Laclede Gas and Light FMGP on November 20, 1990 for the preparation of the SSI work plan. Seepage was observed emanating from the foundation and piping system of an abandoned pump house, formerly part of the Mound Street Power Plant. The pipes were reportedly plugged with concrete; however, seepage was leaching through the concrete. The pump house is located on the eastern side of the flood wall, therefore, the seepage was going directly into the Mississippi River. No samples were collected and no description of the seepage material was made during the site reconnaissance (Reference 3).

- The E&E/FIT submitted an SSI report on the Laclede Gas and Light FMGP Site on October 29, 1991 (Reference 3). Field activities for the SSI occurred March 3-9, 1991. Subsurface soil, surface soil, sediment, surface water and groundwater samples were collected on and around the PFT-Apex Oil property. No samples were collected from the basement of the Mound Street Power Plant Building (Mound Street PCB Site), as originally planned, since the building was being demolished at the time of the SSI field activities. Numerous samples were collected in the vicinity of the Mound Street PCB Site. Only these sample results will be discussed below. Five borehole screening locations, four surface soil sample locations, three groundwater sample locations, three surface water sample locations, and three sediment sample locations are in the vicinity of the Mound Street PCB Site. Screening results indicated the presence of benzene, toluene, xylene and PAHs in the surface and subsurface soil in the vicinity of the Mound Street PCB Site (borings B01, B02, B03, B17 and B18). Boring B23 was utilized as a background location, and the results showed nondetect for volatiles, metals, and semivolatiles. Screening values for surface water samples were nondetect for the same parameters. Screening analysis of sediment samples indicated the presence of xylene and PAHs. Surface soil samples submitted for CLP analysis were collected from the 0 - 2 foot interval. Samples were analyzed for semivolatiles, total metals and cyanide. Cyanide and PAHs were detected above the background detection limits. Metal concentrations were negligible when compared to background levels. Sediment samples submitted for CLP analysis were analyzed for total petroleum hydrocarbons, volatiles, semivolatiles, cyanide and total metals. The extreme upgradient sample (Sample 402) exhibited the highest concentrations; however results are comparable between sediment sample locations. No background sediment sample was collected.

  Five groundwater samples were collected (Sample 201, 202, 203, 204 and 206) and analyzed for volatiles, semivolatiles, cyanide and total metals. Groundwater sample analysis showed 65 ug/L acenapthalene, 25 ug/L fluorene, 46 ug/L phenanthene, 93 ug/L benzene and 1600 ug/L cyanide in Well 204. Well 203 sample analysis did not show any contamination except for 590 ug/L cyanide. Both cyanide results are "J" coded, the value is reported but not valid under approved QC procedures. Well 206 (background) did not show any contamination above detection limits.

Arsenic, barium, copper, chromium, nickel, selenium, vanadium, and zinc were not detected in four surface water samples (Sample 301, 302, 303 and 304), except as indicated. Surface water sample analysis showed lead levels at 7.0 ug/L for 301, 7.2ug/L for 301D, 9.7 ug/L for 302, <24 ug/L for 303, 18 ug/L for 304, and 15ug/L for 304D. Sample location 303 also showed barium at 280 ug/L, vanadium at 62 ug/L, zinc at <89 ug/L and an invalid selenium result of 11 ug/L. Sample location 304 and 304D showed chromium at 14 ug/L and 12 ug/L, respectively. Sample location 304 also had a result of 54 ug/L for zinc. Sample 304 was collected from the Illinois-American Water Company surface intake located across the Mississippi River from the site. Sample locations are shown in Figure 6. Surface water samples were analyzed for total petroleum hydrocarbons, volatiles, semivolatiles, cyanide and total metals. None of the samples collected during the Laclede Coal Gas SSI were analyzed for PCBs.

In the E&E/FIT SSI report, it is stated that a mixed source is present since BETX compounds "are not considered abundant in coal tar." The PAHs and cyanide were attributed to the former coal gas operations. It was also stated that some PAH contamination may be attributed to the adjacent PFT-Apex Facility, which stores oil and asphalt.

- On July 8, 1993 St. Louis MSD personnel discovered oil seeping into the Brooklyn Street storm water pump station, located at the eastern end of Brooklyn Street and approximately 400 feet north of the Mound Street PCB Site (Reference 7). This pump station is only operational during heavy precipitation or if the Mississippi River level is above flood stage. In July, 1993, the Mississippi River was above flood stage. A waste oil sample from the pump station wet well was collected and analyzed for PCBs by the MSD. A PCB concentration of 47 mg/L was detected (Reference 12). The possible source was identified as an underground storage tank (UST) on the adjacent property (Reference 19). On August 9, 1993, waste oil samples from three manholes located along the flood wall were collected and analyzed for PCBs by the MSD. These three manholes are part of the underdrain system for the flood wall and are not part of the storm sewer system. The concentrations of PCBs were 25.4 mg/L in Manhole F-GA1 (#12), 11.7 mg/L in Manhole F-GA1 (#13), 36.6 mg/L in Manhole F-GA1 (#14) (Reference 13). Five 55-gallon drums of waste oil were pumped out of the storm sewer by REACT Environmental Engineers and disposed of by Tipton Environmental Services (References 5 and 7). In the conclusion of the Special Problem Investigation report completed by MSD, it is stated the UST appears to be the source of the oil in the pump station. It is further stated that ground saturation of oil from an old Union Electric facility is another possibility (Reference 19).

A 12,000-gallon UST (10.5 foot diameter by 18.5 feet long) containing petroleum products was discovered during an investigation to identify the potential source of the PCBs in the pump station (Reference 9). The UST was located on Terminal Railroad Association (TRRA) property, southwest of the Brooklyn Street pump station. The TRRA property is located on the north side of Mound Street, directly across from the Mound Street PCB Site. A sample was collected from the UST on July 14, 1993 by MSD. Sample analysis showed PCBs in the UST at 39 mg/L (Reference 12). The existence of the UST was unknown to TRRA prior to notification by the St. Louis Fire Marshall. The tank contents were removed on August 4, 1993 by Environmental Operations, under supervision by GEHM Corporation. Sixteen 55-gallon drums of sludge/liquid were removed from the UST. Sample analysis of the tank contents showed PCBs at less than 10 mg/kg (Reference 9). Analysis of soil samples collected from the UST excavation showed PCBs at less than 0.05 mg/kg (Reference 10). Approximately 30 cubic yards of soil were removed during excavation of a 16 foot wide, 25 foot long and 12 foot deep UST pit. It is estimated that less than 50 gallons of water was in the UST pit after excavation activities (Reference 10); however, no sample of the water was collected. On August 17, 1993 EnTech Engineering, under supervision by GEHM Corporation, conducted an Infrared Thermograph (IR/T) survey of the TRRA Site. No evidence of a leak plume was identified during this study. An anomaly was discovered, approximately 10 foot square, on the Mound Street PCB property. Boreholes were attempted at the location of the anomaly; however, they were abandoned after auger refusal at a depth of 5 feet due to encountering solid rock debris (Reference 9). The foundation or basement of the demolished Mound Street Site buildings could explain the presence of the IR/T anomaly (Reference 7).

A letter from Randel Lewis, Terminal Manager for the Petroleum Fuel and Terminal Facility, to Charles Gay, St. Louis City Fire Inspector, was written in response to a September 8, 1993 telephone conversation (Reference 11). In the letter, Mr. Lewis stated that a leak in a 6-inch pipeline was discovered at the facility. Repairs to the pipeline were made with approximately 2.5 barrels of oil/soil being disposed of. It is further stated that the pipeline was taken out-of-service. The letter does not indicate where the pipeline was located.

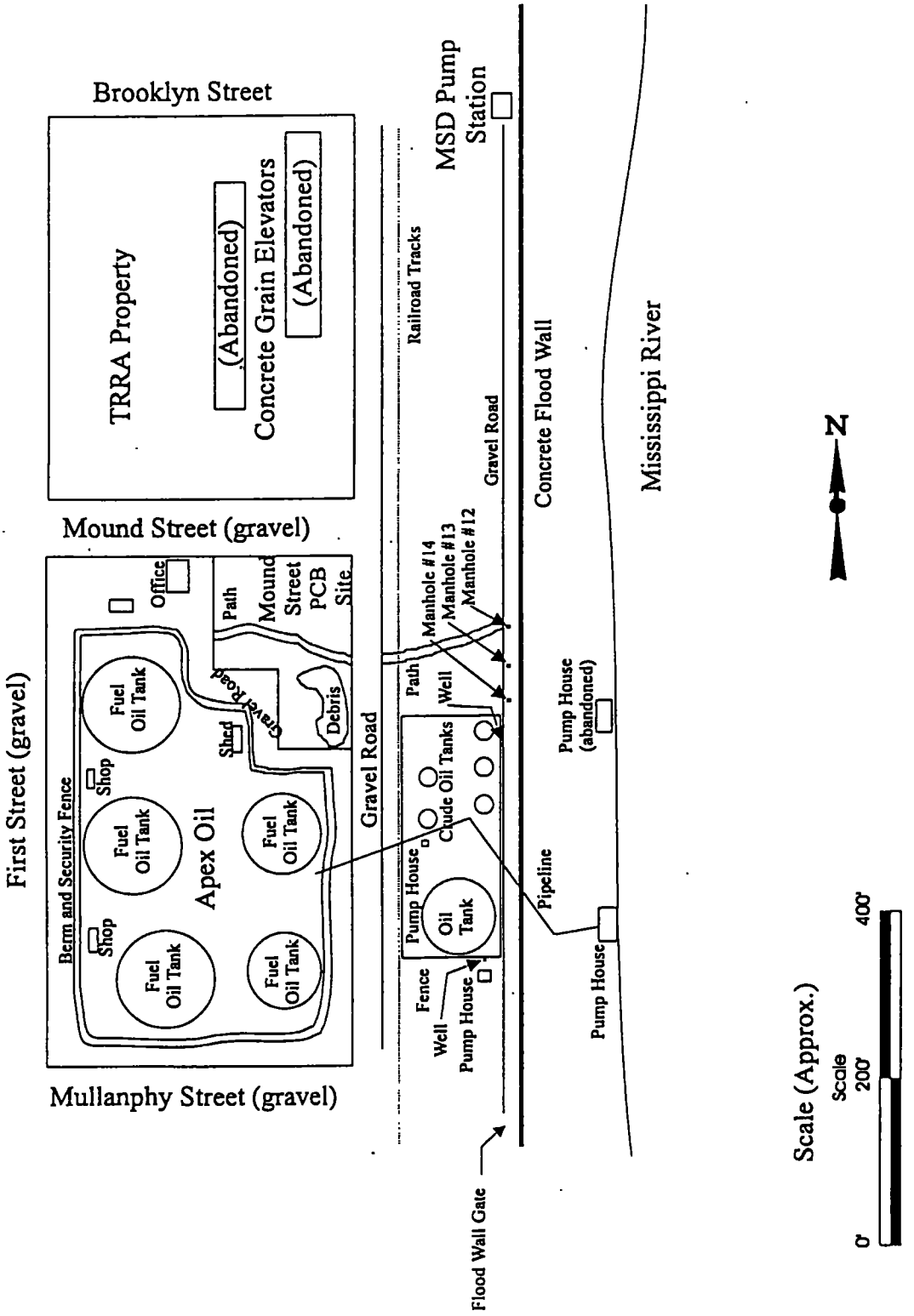
- The Missouri Department of Natural Resources (MDNR) submitted a PA report on the Mound Street PCB Site on March 21, 1994 (Reference 15). Field activities for the PA occurred on November 11, 1993. No samples were collected during the PA. The conclusions of the PA report indicate that a threat from the groundwater pathway is very unlikely, a release to the Mississippi River appears likely, an exposure through the soil pathway is low and an exposure through the air pathway is also low.

  No further incidences of oil in the Brooklyn Street pump station or manholes along the flood wall have occurred since the 1993 spill (Reference 6).

References: 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 19,

GENERAL INFORMATION (continued)

Site Sketch: Provide a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of waste, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.



References: 3, 9, 15, 22, 24

GENERAL INFORMATION (continued)

Source Description: Describe all sources at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

SOURCE TYPES

Landfill: A man-made (by excavating or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

Surface Impoundment: A natural topographic depression, man-made excavation, or dike area, primarily formed from earthen materials (lined or unlined) and designed to hold an accumulation of liquid wastes, wastes containing free liquid, or sludge nor backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized, or leached; structures that may be described as lagoon, pond, tailings pond, sludge pit; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e., buried or backfilled).

Drum: A portable container designed to hold a standard 55-gallon volume of waste.

Tank and Non-Drum Containers: Any device, other than a drum, designed to contain an accumulation of waste that provides structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

Contaminated Soil: An area or volume of soil onto which hazardous substances have been spilled, spread, disposed, or deposited.

Pile: Any non-containerized accumulation above the ground surface of solid, non-flowing waste; includes open drums. Some types of waste piles are:

- Chemical Waste Pile: A pile consisting primarily of discarded chemical products, by-products, radioactive wastes, or used or unused feedstocks.
- Scrap Metal or Junk Pile A pile consisting of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances.
- Tailing Pile: A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.
- Trash Pile A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

Land Treatment: Landfarming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soil.

Other: Sources not in categories listed above.

GENERAL INFORMATION (continued)

Source Description: Include description of containment per pathway for groundwater (see HRS Table 3-2), surface water (see HRS Table 4-2), and air (see HRS Tables 6-3 and 6-9).

The contaminants of concern at the Mound Street PCB Site originate from at least two separate sources; 1) coal gas operations, and 2) electrical power generation and transmission operations. The former is a source for coal tar wastes and spent oxides, while the latter is a potential source for PCBs. Coal tar wastes include polynuclear aromatic hydrocarbons (PAHs) and phenolic compounds resulting from combustion processes, and spent iron oxides resulting from gas purification processes. Benzene, ethylbenzene, toluene and xylene are possible constituents of coal tar wastes. Iron oxides may contain sulphur, cyanide and small quantities of coal tar. PCBs are found in transformer and hydraulic oil. It is estimated that approximately 223,680,000 gallons of coal tar wastes may be buried on the former Laclede Coal Gas Site, which includes the Mound Street PCB Site (Reference 3). The quantity, if any, of PCB contaminated oil in the subsurface is not known.

No confining layer is known to exist between the alluvium and bedrock. Also, no aquifer discontinuity exists within the 4-mile target distance limit (Reference 20). Based on Geoprobe borings conducted during the April, 1996, field activities, the location of the former Mound Street Building is underlain by rock, concrete, bricks and other debris. On the vacant property east of the site, native silt material was encountered to a depth of 27 feet (Reference 24). The depth to bedrock is estimated to be from 20 to 30 feet (Reference 3). The shallowest aquitard in the area is the Maquoketa Shale at the top of the Ordovician System (Reference 20). The depth to groundwater is generally approximately two feet above the Mississippi River and is estimated at 20 feet (Reference 3). Groundwater movement is toward the river, to the east and southeast of the site (References 20 and 21). The groundwater depth was measured at 25 feet below the ground surface during the field activities for this SSI.

The site is essentially flat, with a gentle slope to the east and south. A 500-year concrete flood wall was constructed by the Corps of Engineers and separates the site from the Mississippi River (Reference 22). The runoff from the site is collected in the storm sewer. The storm sewer is connected to the sanitary sewer system, with the wastewater flowing to the Bissle Point Treatment Plant located approximately 2.5 miles upstream (Reference 3).

The site has no structures, fencing, or other obstructions prohibiting access to the site.

References: 3, 20, 21, 22, 24

Hazardous Waste Quantity (HWQ) Calculation: SI Tables 1 and 2 (see HRS Tables 2-5, 2-6, and 5-2).

Single-source for Coal Tar Waste:
Coal Tar Waste potentially disposed of on-site = 223,680,000 gallons

From SI Table 1, Tier C-Volume, HWQ = 10,000 for Coal Tar Wastes

Single-source for PCB waste:
The quantity of PCB wastes is unknown. Therefore, for an unallocated source, based on Section 2.4.2.2 of the Federal Register dated December 14, 1990 and SI Table 1, The HWQ is assigned a default value of 10 for PCB wastes.

Single-source for Oil waste:
The quantity of PCB wastes is unknown. Therefore, for an unallocated source, based on Section 2.4.2.2 of the Federal Register dated December 14, 1990 and SI Table 1, The HWQ is assigned a default value of 10 for oil wastes.

Total Site Waste Quantity is 10,000 (Coal Tar) + 10 (PCB) + 10 (Oil) = 10,020

From SI Table 2, for Total Site WQ of 10,020, the HWQ is 10,000.

Attach additional pages, if necessary HWQ = 10,000

References: 3

SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 if Hazardous Constituent Quantity data are complete HWQ = 10 if Hazardous Constituent Quantity data are not complete	>100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million ft^3 ≤ 250,000 yd^3	> 6.75 million to 675 million ft^3 > 250,000 to 25 million yd^3
	Surface Impoundment	≤ 6,750 ft^3 ≤ 250 yd^3	> 6,750 to 675,000 ft^3 > 250 to 25,000 yd^3
	Drums	≤ 1,000 drums	> 1,000 to 100,000 drums
	Tanks and Non-drum Containers	≤ 50,000 gallons	> 50,000 to 5 million gallons
	Contaminated Soil	≤ 6.75 million ft^3 ≤ 250,000 yd^3	> 6.75 million to 675 million ft^3 > 250,000 to 25 million yd^3
	Pile	≤ 6,750 ft^3 ≤ 250 yd^3	> 6,750 to 675,000 ft^3 > 250 to 25,000 yd^3
	Other	≤ 6,750 ft^3 ≤ 250 yd^3	> 6,750 to 675,000 ft^3 > 250 to 25,000 yd^3
D Area	Landfill	≤ 340,000 ft^2 ≤ 7.8 acres	> 340,000 to 34 million ft^2 > 7.8 to 780 acres
	Surface Impoundment	≤ 1,300 ft^2 ≤ 0.029 acres	> 1,300 to 130,000 ft^2 > 0.029 to 2.9 acres
	Contaminated Soil	≤ 3.4 million ft^2 ≤ 78 acres	> 3.4 million to 340 million ft^2 > 78 to 7,800 acres
	Pile	≤ 1,300 ft^2 ≤ 0.029 acres	> 1,300 to 130,000 ft^2 > 0.029 to 2.9 acres
	Land Treatment	≤ 27,000 ft^2 ≤ 0.62 acres	> 27,000 to 2.7 million ft^2 > 0.62 to 62 acres

I TABLE 1 (CONTINUED)

Single Source Sites (assigned HWQ scores)		Multiple Source Sites		
(Column 5) HWQ = 10,000	(Column 6) HWQ = 1,000,000	(Column 7) Divisors for Assigning Source WQ Value	(Column 2) Source Type	(Column 1) TIER
> 10,000 to 1 million lbs	> 1 million lbs	lbs ÷ 1	N/A	A Hazardous Constituent Quantity
> 50 million to 5 billion lbs	> 5 billion lbs	lbs ÷ 5,000	N/A	B Hazardous Wastestream Quantity
> 675 million to 67.5 billion ft^3 > 25 million to 2.5 billion yd^3	> 67.5 billion ft^3 > 2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Landfill	C Volume
> 675,000 to 67.5 million ft^3 > 25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Surface Impoundment	
> 100,000 to 10 million drums	> 10 million drums	drums ÷ 10	Drums	
> 5 million to 500 million gal.	> 500 million gal.	gallons ÷ 500	Tanks and Non-drum containers	
> 675 million to 67.5 million ft^3 > 25 million to 2.5 billion yd^3	> 67.5 billion ft^3 > 2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Contaminated Soil	
> 675,000 to 67.5 million ft^3 > 25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Pile	
> 675,000 to 67.5 million yd^3 > 25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Other	
> 34 million to 3.4 billion ft^2 > 780 to 78,000 acres	> 3.4 billion ft^2 > 78,000 acres	ft^2 ÷ 3,400 acres ÷ 0.078	Landfill	D Area
> 130,000 to 13 million ft^2 > 2.9 to 290 acres	> 13 million ft^2 > 290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Surface Impoundment	
> 340 million to 34 billion ft^2 > 7,800 to 780,000 acres	> 34 billion ft^2 > 780,000 acres	ft^2 ÷ 34,000 acres ÷ 0.78	Contaminated Soil	
> 130,000 to 13 million ft^2 > 2.9 to 290 acres	> 13 million ft^2 > 290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Pile	
> 2.7 million to 270 million ft^2 > 62 to 6,200 acres	> 270 million ft^2 > 6,200 acres	ft^2 ÷ 270 acres ÷ 0.0062	Land Treatment	

HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If *Actual Contamination Targets* exist for groundwater, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway). For each source, evaluate HWQ for one or more of the four tiers (SI Table 1, HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI table 1 indicates the quantity tier. Column 2 lists source types for the four tires. Columns 3, 4, 5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and wastestream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

- The divisor for the area (square feet) of a landfill is 34,000.
- The divisor for the area (square feet) of a pile is 34.
- Wet surface impoundments and tanks and non-drum containers are the only sources for which volume measurements are evaluated for the soil exposure pathway.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1[a] to 100	1[b]
> 100 to 10,000	100
> 10,000 to 1 million	10,000
> 1 million	1,000,000

[a] If the WQ total is between 0 and 1, round it to 1.

[b] If the hazardous constituent quantity data are not complete, assign the score of 10.

SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: Mound Street PCB Site
Potential Sources: 1. Unallocated PCB source
2. Coal Tar Waste
3. Unallocated Oil source

References: 3, 29, 31, 32, 34

SOURCE	HAZARDOUS SUBSTANCE	(Col 1) Toxicity	GROUNDWATER PATHWAY		SURFACE WATER PATHWAY												
					OVERLAND/FLOOD MIGRATION								GROUNDWATER TO SURFACE WATER				
			(Col 2) GW Mobility HRS Table 3-8 or SCDM*	(Col 3) Tox/Mob Value HRS Table 3-9 (C1xC2)	(Col 4) Per HRS Table 4-10 & 4-11 or (SCDM)	(Col 5) Tox/Per Value HRS Table 4-12 (C1xC4)	(Col 6) Bioacc "Food Chain" HRS Table 4-15 or (SCDM)	(Col 7) Tox/Pers /Bioacc (C5xC6)	(Col 8) Ecotox HRS Table 4-19 or (SCDM)	(Col 9) Ecotox/Pers HRS Table 4-20 (C4xC8)	(Col 10) Eco Bioacc "Environ" or (SCDM)	(Col 11) Ecotox/Pers/ Bioacc Value HRS Table 4-21 (C9xC10)	(Col 12) Tox/Mob/ PersValue HRS Table 4-26 (C3xC4)	(Col 13) Tox/Mob/ Pers/Bioac Value HRS Table 4-28 (C6xC12)	(Col 14) Ecotox/Mob Value (C2xC8)	(Col 15) Ecotox/Mob/ Pers Value HRS Table 4-29 (C4xC14)	(Col 16) Ecotox/Mob/ Pers/Bioacc Value HRS Table 4-30 (C10xC15)
1	PCB	10,000	1	10,000	1	10,000	50,000	5 x E8	10,000	10,000	50,000	5 x E8	10,000	5 x E8	10,000	10,000	5 x E8
2,3	benzene	100	1	100	0.4	40	5,000	2 E5	100	40	500	20,000	40	2 E5	100	40	20,000
2,3	toluene	10	1	10	0 4	4	50	200	100	40	50	2,000	4	200	100	40	2,000
2,3	ethylbenzene	10	1	10	0.4	4	50	200	100	40	50	2,000	4	200	100	40	2,000
2,3	xylene	10	1	10	0 4	4	50	200	100	40	50	2,000	4	200	100	40	2,000
2	fluoranthene	100	1	100	1	100	5,000	5 E5	10,000	10,000	500	5 E6	100	5 E6	10,000	10,000	5 E6
2	pyrene	100	1	100	1	100	50	5,000	10,000	10,000	50	5 E5	100	5,000	10,000	10,000	5 E5
2	naphthalene	100	1	100	0 4	40	500	20,000	1,000	400	500	2 E5	100	50,000	1,000	400	2 E5
2	benzo(k)fluor anthene	100	1	100	1	100	50,000	5 E6	**	**	50,000	**	100	5 E6	**	**	**
2	benzo(a)pyrene	10,000	1	10,000	1	10,000	50,000	5 E8	10,000	10,000	50,000	5 E8	10,000	5 E8	10,000	10,000	5 E8
2	benzo(b)fluor anthene	10,000	1	10,000	1	10,000	50,000	5 E8	**	**	50,000	**	10,000	5 E8	**	**	**
2	benzo(a)anthra cene	10,000	1	10,000	1	10,000	50,000	5 E8	10,000	10,000	50,000	5 E8	10,000	5 E8	10,000	10,000	5 E8
2	chrysene	10	1	10	1	10	500	5,000	1,000	1,000	5,000	5 E7	10	5,000	1,000	1,000	5 E7
2	anthracene	10	1	10	1	10	0.5	5	100	100	0 5	50	10	5	100	100	50
2	ideno(123-cd) pyrene	1,000	1	1,000	1	1,000	50,000	5 E7	**	**	50,000	**	1,000	5 E7	**	**	**
2	phenanthrene	**	1	**	1	**	50	**	10,000	10,000	5,000	5 E8	**	**	10,000	10,000	5 E8
2	acenaphthalene	**	1	**	0 4	**	50	**	**	**	50	**	**	**	**	**	**
2	benzo(ghi)pery lene	**	1	**	1	**	50,000	**	**	**	50,000	**	**	**	**	**	**

SOURCE	HAZARDOUS SUBSTANCE	(Col 1) Toxicity	GROUNDWATER PATHWAY		SURFACE WATER PATHWAY												
					OVERLAND/FLOOD MIGRATION								GROUNDWATER TO SURFACE WATER				
			(Col 2) GW Mobility HRS Table 3-8 or SCDM*	(Col 3) Tox/Mob Value HRS Table 3-9 (C1xC2)	(Col 4) Per HRS Table 4-10 & 4-11 or (SCDM)	(Col 5) Tox/Per Value HRS Table 4-12 (C1xC4)	(Col 6) Bioacc "Food Chain" HRS Table 4-15 or (SCDM)	(Col 7) Tox/Pers /Bioacc (C5xC6)	(Col 8) Ecotox HRS Table 4-19 or (SCDM)	(Col 9) Ecotox/Pers HRS Table 4-20 (C4xC8)	(Col 10) Eco Bioacc "Environ" or (SCDM)	(Col 11) Ecotox/Pers/ Bioacc Value HRS Table 4-21 (C9xC10)	(Col 12) Tox/Mob/ PersValue HRS Table 4-26 (C3xC4)	(Col 13) Tox/Mob/ Pers/Bioac Value HRS Table 4-28 (C6xC12)	(Col 14) Ecotox/Mob Value (C2xC8)	(Col 15) Ecotox/Mob/ Pers Value HRS Table 4-29 (C4xC14)	(Col 16) Ecotox/Mob/ Pers/Bioacc Value HRS Table 4-30 (C10xC15)
2	2-methyl naphthalene	**	1	**	0.4	**	5,000	**	1,000	400	5,000	2 E6	**	**	1,000	400	2 E6
2	fluorene	100	1	100	1	100	50,000	5 E6	1,000	1,000	50,000	5 E7	100	5 E6	1,000	1,000	5 E7
2	bis(2-ethylhexyl) phthalate	100	1	100	1	100	5,000	5 E5	1,000	1,000	5,000	5 E6	100	5 E5	1,000	1,000	5 E6
2	acenaphthalene	10	1	10	0.4	4	500	2,000	10,000	4,000	500	2 E6	4	2,000	10,000	4,000	2 E6
2	cyanide	100	1	100	0.4	40	0 5	20	1,000	400	0.5	200	40	20	1,000	400	200

*Superfund Chemical Data Matrix, June 1994.

** = No Calculated Value

Groundwater Observed Release Substances Summary Table

On SI Table 4, list the hazardous substances associated with the site detected in groundwater samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background. Obtain toxicity values from the Superfund Chemical Data Matrix (SCDM). Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

Groundwater Actual Contamination Targets Summary Table

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for the observed release by well and sample ID on SI Table 5 and record the detected concentration. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals 100%, evaluate the population using the well as a Level I target. If these percentages are less than 100% or all are N/A, evaluate the population using the well as a Level II target for that aquifer.

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Background Concentration	Toxicity/Mobility	References
DC1CY-002	benzene	< 6 ug/L	100	29, 31
DC1CY-002	acenaphthene	< 1.1 ug/L	10	29, 31
DC1CY-002	fluorene	< 5 ug/L	100	29, 31
DC1CY-002	phenanthrene	< 1.1 ug/L	N/A	29, 31
DC1CY-002	bis (2-ethylhexyl) phthalate	< 10 ug/L	100	29, 31
DC1CY-002	cyanide	< 17 ug/L	100	3, 31
		Highest Toxicity/Mobility	100	

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID: _____ Level I _____ Level II _____ Population Served_____ References _____

Sample ID	Hazardous Substance	Conc. (ug/L)	Benchmark Concentration (MCL or MCLG)	% of Benchmark	Cancer Risk	% of Cancer Risk Conc.	RfD	% of RfD References
	NO DRINKING WATER TARGETS							
	No Drinking Water Targets							
			Highest Percent		Sum of Percents		Sum of Percents	

GROUNDWATER PATHWAY
GROUNDWATER USE DESCRIPTION

Describe Groundwater Use within 4 miles of the site: Describe generalized stratigraphy, aquifers, municipal and private wells

The Mound Street PCB Site is located on a "narrow strip of alluvium" between the Mississippi River and limestone bedrock located in the area. Fill material, estimated at 15 to 18 feet thick, overlays the alluvium at the site (Reference 10). Stratified river aluvium consists of silt, clay, and silty clay which becomes coarser with depth and includes gravel lenses. The alluvium can be up to 80 feet thick, with clay and silty clay at shallow depths and silty sand and sand in the deeper portions (Reference 20). Prior to construction of the concrete flood wall, several borings were conducted in the vicinity of the site (Reference 25). Cinders, concrete, rock, and bricks may be up to 26 feet thick, with silt, clay or a mixture of silt and clay underlying the cinders to the limestone bedrock (Reference 25). No confining layer is known to exist between the alluvium and bedrock. Also, no aquifer discontinuity exists within the 4-mile target distance limit (Reference 20). Based on Geoprobe borings conducted during the April, 1996, field activities, the location of the former Mound Street Building is underlain by rock, concrete, bricks and other debris. On the vacant property east of the site, native silt material was encountered to a depth of 27 feet (Reference 24). The bedrock consists of upper Mississippian limestone formations which are, in descending order, Ste. Genevieve Limestone, St. Louis Limestone, shaley limestones of the Salem Formation and Warsaw Formation, Burlington-Keokuk Limestone, and Fern Glen Formation (References 3 and 20). These formations are approximately 600 feet thick (Reference 3).The depth to bedrock is estimated to be from 20 to 30 feet (Reference 3). The shallowest aquitard in the area is the Maquoketa Shale at the top of the Ordovician System (Reference 20). The depth to groundwater is generally approximately two feet above the Mississippi River and is estimated at 20 feet (Reference 3). Groundwater movement is toward the river, to the east and southeast of the site (References 20 and 21). The groundwater depth was measured at 25 feet below the ground surface during the field activities for this SSI. Sinkholes and caves are found in the Mississippian bedrock within the target area. The karst aquifer probably does not directly underlie the site and probably does not affect contaminant transport from the site (Reference 21).

References: 3, 10, 20, 21, 24, 25

Show Calculations of Groundwater Drinking Water Populations for each aquifer: Provide apportionment calculations for blended supply systems.

County average number of persons per household: 2.57 Reference: 27

The City of St. Louis has an average of 2.34 persons per household (Reference 27).

Groundwater within a 4-mile radius of the site is not used for drinking water (References 4, 17 and 20). Irrigation of agricultural crops is possibly conducted via groundwater. The site is not located within a wellhead protection area (Reference 20).

The Mississippi River is located approximately 100 feet east of the sampled monitoring wells and the groundwater level fluctuates with the river level (Reference 3, 20 and 21). Therefore, the groundwater to surface water migration route is a potential exposure pathway.

References: 3, 4, 17, 20, 21, 27

GROUNDWATER PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE		Score	Data Type	Refs
1.	OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.	550	H	3, 29
2.	POTENTIAL TO RELEASE: Depth to aquifer: 20 feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.			
	LR =	550		

TARGETS

	Are any well part of a blended system? Yes__ No__ If yes, attach a page to show apportionment calculations.			
3.	ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5). Level I: _____people x 10 = _____ Level II: _____people x 1 = _____ Total =	0	H	3,4,15,17, 20
4.	POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	0	H	3,4,15,17,20
5.	NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles, assign 0.	0	H	3,4,15,20,33
6.	WELLHEAD PROTECTION AREA (WHPA): In any source lies within or above a WHPA for the aquifer, or if a groundwater observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	0	H	20
7.	RESOURCES: Assign a score of 5 if one or more groundwater resources applies; assign 0 if none applies: • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops. • Watering of commercial livestock. • Ingredient in commercial food preparation. • Supply for commercial aquaculture. • Supply for a major or designated water recreation area, excluding drinking water use.	5	H	20
	Sum of Targets T =	5		

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI Table 6a: Other Than Karst aquifers

Distance from site	Population	Nearest Well (Choose highest)	Population served by Wells within Distance Category											Population Value	References
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3,000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to ¼ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
>¼ to ½ mile		18	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
½ to 1 mile		9	1	5	17	52	167	525	1,669	5,224	16,684	52,239	166,835	522,385		
>1 to 2 miles		5	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842		
>2 to 3 miles		3	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219		
>3 to 4 miles		2	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596		
	Nearest Well=													Sum =		

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI Table 6b: Karst aquifers

Distance from site	Population	Nearest Well (Choose highest)	Population served by Wells within Distance Category											Population Value	References
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3,000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to ¼ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
>¼ to ½ mile		20	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
½ to 1 mile		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>1 to 2 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>2 to 3 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>3 to 4 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
	Nearest													Sum =		

GROUNDWATER PATHWAY WORKSHEET (continued)

WASTE CHARACTERISTICS		Score	Data Type	Does Not Apply
8.	If any Actual Contamination Targets exist for the aquifer or overlying aquifer, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to groundwater	10,000	H	
9.	Assign the highest groundwater toxicity/mobility value from SI Tables 3 or 4	10,000	H	
10.	Multiply the groundwater toxicity/mobility and the hazardous waste quantity scores. Assign the Waste Characteristic score from the table below: (from HRS Table 2-7)	100		

Product	WC Score
0	0
> 0 to < 10	1
10 to < 100	2
100 to < 1,000	3
1,000 to < 10,000	6
10,000 to < 1E+05	10
1E+05 to < 1E+06	18
1E+06 to < 1E+07	32
1E+07 to < 1E+08	56
1E+08 or greater	100

WC = 100

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the groundwater pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

3.33

(Maximum of 100)

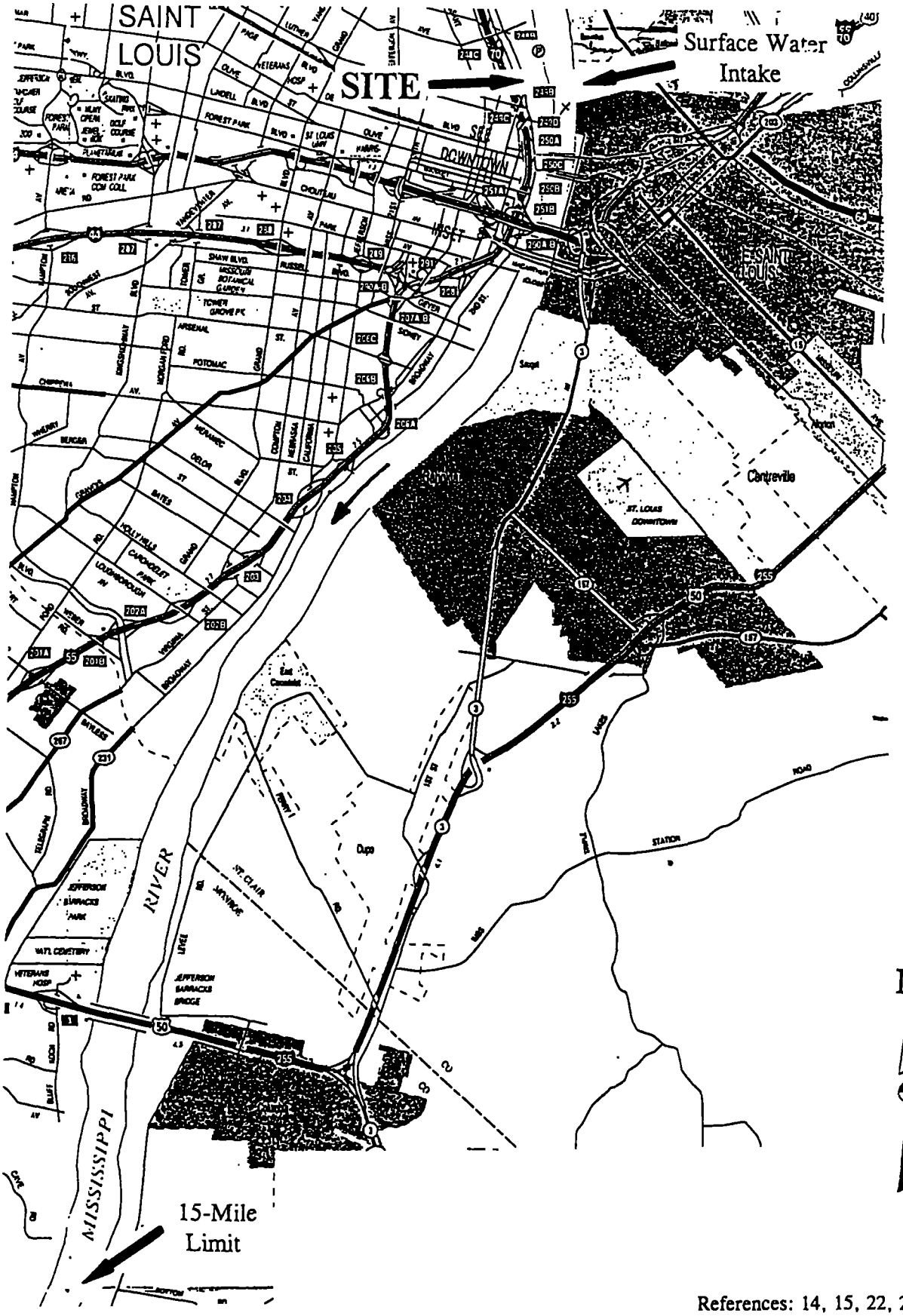
GROUNDWATER PATHWAY SCORE:

$$\frac{LR \times T \times WC}{82{,}500}$$

$$\frac{550 \times 5 \times 100}{82{,}500} = 3.33$$

SURFACE WATER PATHWAY

Sketch of the Surface Water Migration Route: Label all surface water bodies. Include runoff and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influences, and rate.



References: 14, 15, 22, 24, 33

SURFACE WATER PATHWAY

Surface Water Observed Release Substances Summary Table

On SI Table 7, list the hazardous substances detected in surface water samples for the watershed, which can be attributed to the site. Include only those substances in observed releases (direct observation) or with concentration levels significantly above background levels. Obtain toxicity, persistence, bioaccumulation potential, and ecotoxicity values from SCDM. Enter the highest toxicity/persistence, toxicity/persistence/bioaccumulation, and ecotoxicity/persistence/ecobioaccumulation values in the spaces provided.

- TP = Toxicity x Persistence
- TPB = TP x Bioaccumulation
- ETPB = EP x Bioaccumulation (EP = Ecotoxicity x Persistence)

Drinking Water Actual Contamination Targets Summary Table

For an observed release at or beyond a drinking water intake, on SI Table 8 enter each hazardous substance by sample ID and the detected concentration. For surface water sediment samples detecting a hazardous substance at or beyond an intake, evaluate the intake as Level II contamination. Obtain benchmark, cancer risk, and reference dose concentrations for each substance from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages of the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population served by the intake as a Level I target. If the percentages are less than 100% or all N/A, evaluate the population served by the intake as a Level II target.

SI TABLE 7: SURFACE WATER OBSERVED RELEASE SUBSTANCES

Sample ID	Hazardous Substance	Backgrd. Conc.	Toxicity/ Persistence	Toxicity/ persist./ Bioaccum	Ecotoxicity/ Persis/ Ecobioaccum	References
DSX44-402/403	pyrene	< 0.53 mg/kg	100	5,000	5 E5	3,31
DSX44-402/403	benzo(k)fluoranthene	< 0.4 mg/kg	100	5 E6	N/A	3,31
DSX44-402/403	benzo(a)pyrene	< 0.4 mg/kg	10,000	5 E8	5 E8	3,31
DSX44-402/403	benzo(a)anthracene	< 0.4 mg/kg	1,000	5 E7	5 E8	3,31
DSX44-402/403	benzo(g,h,i)perylene	< 0.4 mg/kg	N/A	N/A	N/A	3,31
DSX44-402/403	phenanthene	< 0.4 mg/kg	N/A	N/A	5 E7	3,31
DSX44-402/403	fluoranthene	< 0.52 mg/kg	100	5 E5	5 E6	3,31
DSX44-402/403	di-n-octyl phthalate	< 0.4 mg/kg	N/A	N/A	N/A	3,31
DSX44-402/403	cyanide	< 24 mg/kg	40	20	200	3,31
		Highest Values	10,000	5 E8	5 E8	

SI TABLE 8: SURFACE WATER DRINKING WATER ACTUAL CONTAMINATION TARGETS

Intake ID _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (u g/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk	% of Cancer Risk Conc.	RfD	% of RfD
			Highest percent		Sum of Percents		Sum of Percents	

NO TARGETS

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SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET

LIKELIHOOD OF RELEASE - OVERLAND/FLOOD MIGRATION	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.	550	H	3,4
2. POTENTIAL TO RELEASE: Distance to surface water: 300 feet. If sampling data do not support a release to surface water in the watershed, use the table below to assign a score from the table below based on distance to surface water and flood potential.			

Distance to surface water body <2500 feet	500
Distance to surface water body >2500 feet, and	
Site in annual or 10-yr floodplain	500
Site in 100-yr floodplain	400
Site in 500-yr floodplain	300
Site outside 500-yr floodplain	100

Optionally, evaluate potential to release according to HRS Section 4.1.2.1.2.

LR = 550

LIKELIHOOD OF RELEASE GROUNDWATER TO SURFACE WATER MIGRATION	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.	550	H	20,21
NOTE: Evaluate groundwater to surface water migration only for a surface water body that meets all of the following conditions:			
1) A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0.			
2) No aquifer discontinuity is established between the source and the above portion of the surface water body.			
3) The top of the uppermost aquifer is at or above the bottom of the surface water.			
Elevation of top of uppermost aquifer: 20-25 feet below ground surface			
Elevation of bottom of surface water body: > 20-25 feet below ground surface			
2. POTENTIAL TO RELEASE: Use the groundwater potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2.			

LR = 550

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET (CONTINUED)

DRINKING WATER THREAT TARGETS

	Score	Data Type	Refs

Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5.

Intake Name	Water Body Type	Flow	People Served
IL-American Water Company	Very Large River	>100,000	180,000

Are any intake part of a blended system? Yes__X__ No_____
If yes, attach a page to show apportionment calculations.

		0	H	17,20

3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8).

_____, _____

Level I: _____ people x 10 = _____
Level II:_____ people x 1 = _____ Total =

4.	POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.	0.2	H	3,15
5.	NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Target for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.	0	H	15,17
6.	RESOURCES: Assign a score of 5 if one or more surface water resources applies; assign 0 if none applies: • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops. • Watering of commercial livestock. • Ingredient in commercial food preparation. • Major or designated water recreation area, excluding drinking water use.	5	H	20,33
	SUM OF TARGETS T =	5.2		

SI TABLE 9 (From HRS TABLE 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Numer of People									
			0	1 to 10	11 to	31 to 100	101 to 300	301 to 1000	1001 to 3,000	3001 to 10,000	10,001 to 30,000	Population Value
Minimal Stream (<10 cfs)		20	0	4	17	53	164	522	1,633	5,214	16,325	
Small to moderate stream (10 to 100 cfs)		2	0	0.4	2	5	16	52	163	521	1,633	
Moderate to large stream (100 - 1,000 cfs)		0	0	0.04	0.2	0.5	2	5	16	52	163	
Large Stream to river (>1,000 to 10,000 cfs)		0	0	0.004	0.02	0.05	0.2	0.5	2	5	16	
Large River (>10,000 to 100,000 cfs)		0	0	0	0.002	0.005	0.02	0.05	0.02	0.05	16	
Very Large River (>100,000 cfs)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.02	
Shallow ocean zone or Great Lake (Depth < 20 feet)		0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	2	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)		0	0	0	0	0.001	0.002	0.005	0.02	0.05	0..2	
Deep ocean zone or Great Lake (Depth > 200 feet)		0	0	0	0	0	0.001	0.003	0.008	0.03	0.08	
3-mile mixing zone in quiet flowing river (≥ 10 cfs)		10	0	2	9	26	82	261	817	2,607	8,163	
Nearest Intake =											Sum =	

References _____

Type of Surface Water Body	Pop.	Nearest Intake	30,001to 100,00	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	3,000,001 to 10,000,000	Population Value
Minimal Stream (<10 cfs)		20	52,137	163,246	521,360	1,632,455	5,213,590	
Small to moderate stream (10 to 100 cfs)		2	5,214	16,235	52,136	163,245	521,359	
Moderate to large stream (100 - 1,000 cfs)		0	521	1,633	5,214	16,325	52,136	
Large Stream to river (>1,000 to 10,000 cfs)		0	52	163	521	1,632	5,214	
Large River (>10,000 to 100,000 cfs)		0	5	16	52	163	521	
Very Large River (>100,000 cfs)	180,000	0	0.5	2	5	16	52	2
Shallow ocean zone or Great Lake (Depth < 20 feet)		0	5	16	52	163	521	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)		0	0.5	2	5	16	52	
Deep ocean zone or Great Lake (Depth > 200 feet)		0	0.3	1	3	8	26	
3-mile mixing zone in quiet flowing river (≥ 10 cfs)		10	26,068	81,623	260,680	816,227	2,606,795	
Nearest Intake =		0					Sum =	2

References: 15, 17, 20

Human Food Chain Actual Contamination Targets Summary Table

On SI Table 10, list the hazardous substances detected in sediment, aqueous, sessile benthic organism tissue, or fish samples (taken from fish caught within the boundaries of the observed release) by sample ID and concentration. Evaluate fisheries within the boundaries of observed releases detected by sediment or aqueous samples as Level II, if at least one observed release substance has a bioaccumulation potential factor value of 500 or greater (see SI Table 7). Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of the fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as a Level II target.

Sensitive Environment Actual Contamination Targets Summary Table

On SI Table 11, list each hazardous substance detected in aqueous or sediment sample at or beyond wetlands or a surface water sensitive environment by sample ID. Record the concentration. If contaminated sediments or tissues are detected at or beyond a sensitive environment, evaluate the sensitive environment as Level II. Obtain benchmark concentrations from SCDM. For AWQC/AALAC benchmarks, determine the highest percentage of benchmark of the substances detected in aqueous samples. If benchmark concentrations are not available for a particular substance, enter N/A for the percentage. If the benchmark percentage equals or exceeds 100%, evaluate that part of the sensitive environment subject to Level I concentrations. If the percentage is less than 100%, or all are N/A, evaluate the sensitive environment as Level II.

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Fishery ID Mississippi River Sample Type Sediment Level I _____ Level II X References 3, 15, 31

Sample ID	Hazardous Substance	Conc. (mg/kg)	Benchmark Concentration (FDAAL)	% of Benchmark	Cancer Risk Concentration	% of Cancer Risk Concentration	RfD	% of RfD
DSX44-402/403	pyrene	8	N/A	N/A	N/A	N/A	41	19.5
DSX44-402/403	benzo(k)fluoranthene	3.1	N/A	N/A	4.3 E-3	72093	N/A	N/A
DSX44-402/403	benzo(a)pyrene	5.6	N/A	N/A	4.3 E-4	1302336	N/A	N/A
DSX44-402/403	benzo(a)anthracene	4.2	N/A	N/A	4.3 E-3	97674	N/A	N/A
DSX44-402/403	benzo(g,h,i)perylene	4.2	N/A	N/A	N/A	N/A	N/A	N/A
DSX44-402/403	phenanthene	4.4	N/A	N/A	N/A	N/A	N/A	N/A
DSX44-402/403	fluoranthene	5.1	N/A	N/A	N/A	N/A	54	9.4
DSX44-402/403	di-n-octyl phthalate	4.9	N/A	N/A	N/A	N/A	N/A	N/A
DSX44-402/403	cyanide	1.6	N/A	N/A	N/A	N/A	27	5.9
			Highest Percent	N/A	Sum of Percents	1472093	Sum of Percents	34.8

SI TABLE 11 : SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Environmental ID Mississippi River Sample Type Direct Observation Level I _____ Level II X References 3

Sample ID	Hazardous Substance	Conc. (ug/L)	Benchmark Conc. (AWQC OR AALAC)	% of Benchmark	Rerferences
	NO CHEMICAL DATA AVAILABLE				
			Highest percent		

SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT WORKSHEET

HUMAN FOOD CHAIN THREAT TARGETS	Score	Data Type	Refs

Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.

Fishery Name: Mississippi River Water Body: Very Large River Flow: >100,000 cfs

Species paddlefish Production 175 lbs/yr
Species gar Production 34 lbs/yr
Species carp Production 960 lbs/yr
Species sturgeon Production 60 lbs/yr
Species blue catfish Production 801 lbs/yr
Species channel catfish Production 2703 lbs/yr
Species flathead catfish Production 694 lbs/yr
Species drum Production 170 lbs/yr
Species buffalo Production 2171 lbs/yr

FOOD CHAIN INDIVIDUAL

7. ACTUAL CONTAMINATION FISHERIES:

If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery.

45 | H | 18,34

8. POTENTIAL CONTAMINATION FISHERIES:

If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20.

If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:

Lowest Flow	FCI Value
< 10 cfs	20
10 to 100 cfs	2
> 100 cfs, coastal tidal waters, oceans, or Great Lakes	0
3-mile mixing zone in quiet flowing river	10

FCI Value =

SUM OF TARGETS T = 45

SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT WORKSHEET

When measuring length of wetlands that are located on both sides of a surface water body, sum both frontage lengths. For a sensitive environment that is more than one type, assign a value for each type.

ENVIRONMENTAL THREAT TARGETS

	Score	Data Type	Refs

Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.

Environment Name	Water Body Type	Flow cfs
Mississippi River	Very Large River	>100,000

9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table 11, and assign a factor value for the environment (SI Tables 13 and 14).

Environment Name	Environment Type and Value (SI Tables 13 and 14)	Multiplier (10 for Level I, 1 for Level II)	Product
Miss. River	75 (habitat known to be used by ...)	x 1	= 75
		x	=
		x	=
		x	=

Sum = 75 | H | 2,3, 15

10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:

Flow (cfs)	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Potential Contamination	Product
100000	0.00001	x 25 (wetlands - 0.7 miles in IL)	x 0.1	=2.5 E-4
100000	0.00001	x 100 (Jefferson Nat'l Exp. Mem. Park)	x 0.1	=1 E-3
100000	0.00001	x 100 (Jefferson Barracks Park)	x 0.1	=1 E-3

Sum = 2.25 E-3 | H | 1,3, 20, 33

T = 75

SI TABLE 12 (HRS TABLE 4-13):
SURFACE WATER DILUTION WEIGHTS

TYPE OF SURFACE WATER BODY		Assigned Dilution Weight
Description	**Flow Characteristics**	
Minimal stream	< 10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	> 100 to 1,000 cfs	0.01
Large stream to river	> 1,000 to 10,000 cfs	0.001
Large river	> 10,000 to 100,000 cfs	0.0001
Very large river	**> 100,000 cfs**	**0.00001**
Coastal tidal waters	Flow not applicable, depth not applicable	0.0001
Shallow ocean zone or Great Lakes	Flow not applicable, depth less than 20 feet	0.0001
Moderate depth ocean zone or Great Lakes	Flow not applicable, depth 20 to 200 feet	0.00001
Deep ocean zone or Great Lakes	Flow not applicable, depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

SI TABLE 13 (HRS TABLE 4-23)
SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important area identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or Sate Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathway and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreation	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5
Wetlands See SI table 14 (Surface Water Pathway) or SI Table 23 (Air Pathway)	

SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER WETLANDS FRONTAGE VALUES

TOTAL LENGTH OF WETLANDS	ASSIGNED VALUE
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

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SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS

		Score
11.	If an Actual Contamination Target (drinking water, human food chain, or environmental threat) exists for the watershed, assign the calculated hazardous waste quantity score, or a score of 100, whichever is great.	10,000
12.	Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.	WC Score (from Table)

	Substance Value	HWQ	Product	
Drinking Water Threat Toxicity/Persistence	10,000	x 10,000	= 1 E8	100
Food Chain Threat Toxicity/Persistence/ Bioaccumulation	5 E8	x 10,000	= 1 E12	1000
Environment Threat Ecotoxicity/Persistence /Ecobioaccumulation	5 E8	x 10,000	= 1 E12	1000

Product	WC Score
0	0
> 0 to < 10	1
10 to < 100	2
100 to < 1,000	3
1,000 to < 10,000	6
10,000 to < 1E+05	10
1E+05 to < 1E+06	18
1E+06 to < 1E+07	32
1E+07 to < 1E+08	56
1E+08 to < 1E+09	100
1E+09 to < 1E+10	180
1E+10 to < 1E+11	320
1E+11 to < 1E+12	560
1E+12 or greater	1000

SURFACE WATER PATHWAY THREAT SCORES

Threat	Likelihood of Release (LR) Score	Target (T) Score	Pathway Waste Characteristic (WC) Score (determined above)	LR x T x WC / 82,500
Drinking Water	550	5.2	100	(maximum of 100) 3.47
Human Food Chain	550	45	1000	(maximum of 100) 100
Environment	550	75	1000	(maximum of 60) 60

SURFACE WATER PATHWAY SCORE
(Drinking Water Threat + Human Food Chain Threat + Environmental Threat)

(maximum of 100) 100

SOIL EXPOSURE PATHWAY

If there is no observed contamination (e.g., groundwater plume with no known surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

Soil Exposure Resident Population Targets Summary

For each property (duplicate page 35 if necessary):

If there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substances listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals 100%, evaluate the residents and students as Level I. If both percentages are less than 100% or all are N/A, evaluate the targets as Level II.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID No Resident Population Level I _____ Level II _____ Population N/A

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc	RfD	% of RfD.	Toxicity Value	References
DSX44-102	pyrene	21	N/A	N/A	2.3 E3	0.91	100	3, 31
DSX44-107	naphthalene	60	N/A	N/A	N/A	N/A	100	3, 31
DSX44-107	2-methylnaphthalene	13	N/A	N/A	N/A	N/A	N/A	3, 31
DSX44-108	acenaphthylene	2.4	N/A	N/A	N/A	N/A	N/A	3, 31
DSX44-108	acenaphthene	0.69	N/A	N/A	4.7 E3	1.5 E-2	10	3, 31
DSX44-108	fluorene	3.1	N/A	N/A	3.1 E3	0.1	100	3, 31
DSX44-108	cyanide	98	N/A	N/A	1600	6.1	100	3,31
DSX44-109	phenanthene	2.2	N/A	N/A	N/A	N/A	N/A	3, 31
DSX44-109	anthracene	0.78	N/A	N/A	2.3 E4	3.4 E-3	10	3, 31
DSX44-109	fluoranthene	2.8	N/A	N/A	3.1 E3	0.09	100	3, 31
DSX44-109	benzo(a)anthracene	4.5	8.8 E-1	511.4	N/A	N/A	1000	3, 31
DSX44-109	chrysene	4.3	8 8 E1	4.9	N/A	N/A	10	3, 31
DSX44-109	benzo(b)fluoranthene	4.9	8 8 E-1	556.8	N/A	N/A	10,000	3, 31
DSX44-109	benzo(k)fluoranthene	3.4	8.8	38.6	N/A	N/A	100	3, 31
DSX44-109	benzo(a)pyrene	4.2	8.8 E-2	4772.7	N/A	N/A	10,000	3, 31
DSX44-109	ideno(1.2,3-cd)pyrene	2.7	8.8 E-1	306.8	N/A	N/A	1000	3, 31
DSX44-109	benzo(g,h,i)perylene	2.6	N/A	N/A	N/A	N/A	N/A	3, 31
			Highest percent	4772.7	Sum of Percents	7.22		

SOIL EXPOSURE PATHWAY WORKSHEET
RESIDENT POPULATION THREAT

LIKELIHOOD OF RELEASE		Score	Data Type	Refs
1.	OBSERVED CONTAMINATION: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign a 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.	550	H	3,31
	LE =	550		

TARGETS

2.	RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on the property and within 200 feet of areas of observed contamination (HRS Section 5.1.3). Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Sum =	0	H	3,15
3.	RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists (i.e., no Level I or Level II targets), assign 0 (HRS Section 5.1.3).	0	H	3,15
4.	WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities and within 200 feet of areas of observed contamination associated with the site.	5	H	15
5.	TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination. Sum =	0	H	15
6.	RESOURCES: Assign a score of 5 if one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies: • Commercial agriculture. • Commercial silverculture. • Commercial livestock production or commercial livestock grazing.	0	H	33
	Sum of Targets T =	5		

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
> 1,000	15

Terrestrial Sensitive Environmental Type	Value
_____	_____
_____	_____
_____	_____

SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY
TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

TERRESTRIAL SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species National Preserve (terrestrial) National or Sate terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federal designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

SOIL EXPOSURE PATHWAY WORKSHEET
NEARBY POPULATION THREAT

LIKELIHOOD OF RELEASE		Score	Data Type	Refs
7. Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6)	Value 10			
Area of Contamination (from SI Table 18 or HRS Table 5-7)	Value 20			
	Likelihood of Exposure (from SI Table 19 or HRS Table 5-8)	5	H	3,15 22,24
	LE =	5		

TARGETS		Score	Data Type	Refs
8. Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within ¼ mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within ¼ mile travel distance and no Level I or Level II resident population has been evaluated.		1	H	3,15
9. Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (i.e., properties that are not determined to be Level I or Level II); record the population for each distance category in SI table 20 (HRS Table 5-10). Sum the population values and multiply by 0.1.		6.6	H	3,15
	Sum of Targets T =	7.6		

SI TABLE 17 (HRS TABLE 5-6):
ATTRACTIVENESS / ACCESSIBILITY VALUES

AREA OF OBSERVED CONTAMINATION	ASSIGNED VALUE
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements - for example, gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	**10**
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

SI TABLE 18 (HRS TABLE 5-7):
AREA OF CONTAMINATION FACTOR VALUES

TOTAL AREA OF THE AREAS OF OBSERVED CONTAMINATION (SQUARE FEET)	ASSIGNED VALUE
≤ to 5,000	5
> 5,000 to 125,000	**20**
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100

SI TABLE 19 (HRS TABLE 5-8): NEARBY POPULATION LIKELIHOOD OF EXPOSURE FACTOR VALUES

AREA OF CONTAMINATION FACTOR VALUE	ATTRACTIVENESS/ACCESSIBILITY FACTOR VALUE						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

SI TABLE 20 (HRS TABLE 5-10): DISTANCE-WEIGHTED POPULATION VALUES FOR NEARBY POPULATION THREAT

Travel Distance Category (Miles)	Pop.	Number of people within the travel distance category												
		0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	Pop. Value
Greater than 0 to ¼	828	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034	13
Greater than ¼ to ½	2423	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517	20
Greater than ½ to 1	9672	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258	33
													Sum=	66

Reference(s) 3, 15, 33

SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS

10.	Assign the hazardous waste quantity score calculated for soil exposure	10,000
11.	Assign the highest toxicity value from SI Table 15 or SI Table 3	10,000
12.	Multiply the toxicity and hazardous waste quantity score. Assign the Waste Characteristic score from the table below:	WC = 100

Product	WC Score
0	0
> 0 to < 10	1
10 to < 100	2
100 to < 1,000	3
1,000 to < 10,000	6
10, 000 to < 1E+05	10
1E+05 to < 1E+06	18
1E+06 to < 1E+07	32
1E+07 to < 1E+08	56
1E+08 or greater	100

RESIDENT POPULATION THREAT SCORE
(Likelihood of Exposure, Question 1;
Target = Sum of Questions 2, 3, 4, 5, 6)

$$\frac{LE \times T \times WC}{82{,}500}$$

3.33

NEARBY POPULATION THREAT SCORE:
(Likelihood of Exposure, Question 7;
Targets = Sum of Questions 8, 9)

$$\frac{LE \times T \times WC}{82{,}500}$$

0.05

SOIL EXPOSURE PATHWAY SCORE:
Resident Population Threat + Nearby Population Threat

3.38

Maximum of 100

AIR PATHWAY

Air Pathway Observed Substances Summary Table

On SI Table 21, list the hazardous substances detected in air samples of a release from the site (also see HRS Sections 6.2.1.1 through 6.2.1.3). Include only those substances significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any close distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance category that are nor Level I as Level II.

AIR PATHWAY
NOT EVALUATED

SI TABLE 21: AIR PATHWAT OBSERVED RELEASE SUBSTANCES

Sample ID _____ Level I _____ Level II _____ Distance from Source(s) _____ References _____

Hazardous Substance	Conc. (ug/m³)	Gaseous Particles	Benchmark Conc. (NAAQS OR NESHAPS)	% Of Benchmark	Cancer Risk Concentration	% of Cancer Risk Concentration	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percents		Sum of Percents		Sum of Percents	

Sample ID _____ Level I _____ Level II _____ Distance from Source(s) _____ References _____

Hazardous Substance	Conc. (ug/m³)	Toxicity / Mobility	Benchmark Conc. (NAAQS OR NESHAPS)	% Of Benchmark	Cancer Risk Concentration	% of Cancer Risk Concentration	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percents		Sum of Percents		Sum of Percents	

Sample ID _____ Level I _____ Level II _____ Distance from Source(s) _____ References _____

Hazardous Substance	Conc. (ug/m³)	Toxicity / Mobility	Benchmark Conc. (NAAQS OR NESHAPS)	% Of Benchmark	Cancer Risk Concentration	% of Cancer Risk Concentration	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percents		Sum of Percents		Sum of Percents	

AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE		Score	Data Type	Refs
1.	OBSERVED CONTAMINATION: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI table 21.			
2.	POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2).			
	LE =			

TARGETS

3.	ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air. Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total =			
4.	POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign a total population score from SI Table 22. Sum the values and multiply the sum by 0.1.			
5.	NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign ther Nearest Individual score from SI Table 22.			
6.	ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI table 13) and wetland acreage values (SI table 23) for environments subject to exposure from the release of a hazardous substance to the air.			
7.	POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release.			
8.	RESOURCES: Assign a score of 5 if one or more resources apply within ½ mile of the source; assign a 0 if none applies. • Commercial agriculture. • Commercial silverculture. • Major or designated recreation area.			
	T =			

Terrestrial Sensitive Environmental Type	Value
_____	_____
_____	_____
_____	_____

Wetland Acreage	Value
_____	_____
_____	_____
_____	_____

SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category											
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	Pop. Value
On a source		20	4	17	53	164	522	1,633	5.214	16,325	52,137	163,246	521,360	1,632,455	
0 to ¼ mile		*	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	
> ¼ to ½ mile		2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	
> ½ to 1 mile		1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	
> 1 to 2 miles		0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,326	
> 2 to 3 miles		0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	
> 3 to 4 miles		0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	
	Nearest Individual =												Sum =		

References _____

* Score = 20 if the Nearest Individual is within 1/8 mile of a source; score = 7 if the Nearest Individual is between 1/8 and 1/4 mile of a source.

SI TABLE 23 (HRS TABLE 6-18):
AIR PATHWAY VALUES FOR WETLAND AREA

WETLAND AREA	ASSIGNED VALUE
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24:
DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI tables 13 and 20)	Product
On A Source	0.10	x	
0 - ¼ mile	0.025	x	
¼- ½ mile	0.0054	x	
½- 1 mile	0.0016	x	
1 - 2 miles	0.0005	x	
2 - 3 miles	0.00023	x	
3 - 4 miles	0.00014	x	
> 4 miles	0	x	
		Total Environments Score =	

AIR PATHWAY (concluded)

WASTE CHARACTERISTICS

9.	If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculkated HWQ score for sources available to air migration.	
10.	Assign the highest toxicity/mobility value from SI Table 21 and HRS Sections 6.2.1.1 through 6.2.1.3.	
11.	Multiply the air pathway toxicity/mobility value from SI Table 21.	WC =

Product	WC Score
0	0
> 0 to < 10	1
10 to < 100	2
100 to < 1,000	3
1,000 to < 10,000	6
10, 000 to < 1E+05	10
1E+05 to < 1E+06	18
1E+06 to < 1E+07	32
1E+07 to < 1E+08	56
1E+08 or greater	100

AIR PATHWAY SCORE $\frac{LE \times T \times WC}{82,500}$

maximum of 100

SITE SCORE CALCULATION	S	S^2
GROUNDWATER PATHWAY SCORE (S_{GW})	3.33	11.11
SURFACE WATER PATHWAY SCORE (S_{SW})	100	10,000
SOIL EXPOSURE SCORE (S_S)	3.38	11.42
AIR PATHWAY SCORE (S_A)	NOT EVALUATED	NOT EVALUATED
SITE SCORE $\sqrt{\frac{S_{GW}^2 + S_{SW}^2 + S_S^2 + S_A^2}{4}}$		= 50.1

COMMENTS

Based on analytical data collected during this SSI and from previous investigations, an observed release to soil, groundwater, and surface water has been identified for benzene and PAHs. Due to the lack of targets for the soil and groundwater pathways, they are of low concern. The surface water pathway is of primary concern and could be considered a "target" of the soil and groundwater pathways.

PCB contamination was not identified during this SSI or from previous investigations.

The potential sources of benzene and PAH contamination are the FMGP and/or the Petroleum, Fuel and Terminal-Apex Oil facility.

SI SCORESHEET REFERENCES

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4 Ecology and Environment/Field Investigation Team (E&E/FIT). June 23, 1988. Preliminary Assessment, Mound Street Power Plant, St. Louis, Missouri.

5 Edmond, Howard. Metropolitan Sewer District. December 13, 1993. Telephone conversation with Don Falls, MDNR Hazardous Waste Program, Superfund Section.

6 Edmond, Howard. Metropolitan Sewer District. November 21, 1995. Telephone conversation with Mike May, Sverdrup.

7 Falls, Don. MDNR Hazardous Waste Program, Superfund Section. November 22, 1993a. Mound Street PCB Site Reconnaissance Memorandum.

8 Falls, Don. MDNR Hazardous Waste Program, Superfund Section. December 13, 1993b. Latitude/Longitude Calculation Worksheet.

9 GEHM Corporation (GEHM). September 1, 1993a. Activities Report, TRRA of St. Louis, First and Mound Streets Site, MDNR Spill Report #07143-KB-1331.

10 GEHM Corporation (GEHM). October 26, 1993b. UST Removal Closure Report.

11 Lewis, R.H., Petroleum Fuel and Terminal. Letter to Charles Gay, Fire Inspector. Subject: Identification of pipeline leak per a September 8, 1993 telephone conversation. (Received by Howard Edmond, MSD, on September 30, 1993).

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13 Metropolitan Sewer District, Environmental Compliance Laboratory (MSD). August 13, 1993b. Sample analysis of Manhole F-GA1 (#12), (#13), and (#14).

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20 Starbuck, Edith. Missouri Department of Natural Resources, Division of Geology and Land Survey. December 29, 1993. PA/SI Report for the Mound Street Site, St. Louis, City.

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25 U.S. Army Corps of Engineers, St Louis District, (USACE). August 30, 1962. Flood Protection Reach 3, Floodwall and General Contract Items. Station 352+00 to Station 369+00 drawing and Soil Exploration Data.

26 U.S. Department of Agriculture, Soil Conservation Service (USDA). April 1982. Soil Survey of St. Louis County and St. Louis City, Missouri.

27 U.S. Department of Commerce, Bureau of Census (Census). 1990. 1990 Census of Population and Housing, Summary of Population and Housing Characteristics, Missouri.

28 U.S. Department of Commerce (USDC). 1983. The Climatic Atlas of the United States.

29 U.S. Environmental Protection Agency (U.S. EPA). May 3, 1996. Data Transmittal for Activity DC1CY, Mound Street PCB Site.

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33 U. S. Geological Survey (USGS). 7.5 Minute Series Topographic Map. Granite City, Missouri-Illinois 1954 (photorevised 1974), Cahokia, Illinois-Missouri 1954 (photorevised 1974), Clayton, Missouri 1954 (photorevised 1974), French Village, Illinois 1954 (photorevised 1982), Monks Mound, Illinois 1954 (photorevised 1993), Webster Groves, Missouri 1954 (photorevised 1974).

34 U.S. Government Printing Office, Environmental Protection Agency, Hazard Ranking System Final Rule. December 14, 1990. 40 CFR Part 300. Federal Register/Volume 55/no. 241.

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
Hazardous Waste Program

Reference 1

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCBs

Date: March 15, 1994

TELEPHONE (314) 425-4468

Incoming ( )
Outgoing (X)

CONFERENCE

Field ( )
Office ( )

SUBJECT: Jefferson National Expansion Memorial - Gateway Arch

PERSONS INVOLVED

Name	Representing
Ms. Louise Barra	National Park Service, Gateway Arch
Don Falls	MDNR, Hazardous Waste Program

SUMMARY OF CONVERSATION:

I phoned the public affairs office of the Jefferson National Expansion Memorial in St. Louis and spoke with a Ms. Louise Barra. Ms. Barra is a public affairs officer with the National Park Service. I asked Ms. Barra if she could tell me the exact acreage of the park and the total annual attendance. Ms. Barra informed me that the park encompasses just over 90 acres and the total annual attendance for all the park property, including the parking structure, is approximately 2.7 million people.

FINAL RESULTS:

This information will be incorporated into the Mound Street PCB Preliminary Assessment.

Don Falls

Don Falls
Environmental Specialist
Hazardous Waste Program

DF:so

Reference 3

Final Report
Screening Site Inspection
Laclede Coal Gas
St. Louis, Missouri
EPA ID# MOD981715980
TDD #F-07-9008-020 PAN #FM00579SA
Site #Y33 Project #002
Prepared by E & E/FIT for the
Region VII EPA RPO
Project Manager: Keith Brown
Superfund Contact: Greg Reesor
Date: October 29, 1991

EPA
HAZARDOUS
SITE
EVALUATION
DIVISION

Field Investigation Team Zone II

CONTRACT NO.
68-01-7347

ecology and environment, inc.

Preliminary Assessment
Mound Street Power Plant
St. Louis, Missouri
TDD #F-07-8708-29 PAN #FM00579PA
Site #Y33 Project #001
Prepared by: E & E/FIT for Region VII EPA
Task Leader: Eric Hess, E & E/FIT
Superfund Contact: Pauletta R. France-Isetts
Date: June 23, 1988

Reference 5

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
Hazardous Waste Program

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCB Site

Date: December 13, 1993

TELEPHONE (314) 436-8735

CONFERENCE

Incoming ( )
Outgoing (X)

Field ( )
Office (X)

SUBJECT: Mound Street PCB Site

PERSONS INVOLVED

Name	Representing
Don Falls	MDNR/HWP
Howard Edmond	Metropolitan Sewer District
Anne Olberding	USEPA, Region VII (913) 551-7718
Bob Jackson	USEPA, Region VII (913) 551-7020

SUMMARY OF CONVERSATION:

I phoned Mr. Howard Edmond of the MSD (Metropolitan Sewer District) to find out exactly how the waste oil was seeping into the Brooklyn Street pump station. Mr. Howard explained that sometime around the middle of July 1993, oil was noticed seeping from the storm sewer into the wet well of the pump station. Mr. Howard said that the Brooklyn Street pump station only pumps storm water, and therefore only operates during periods of rain. Mr. Howard said that the oil stayed on top of the wet well, and was later pumped off by React Environmental. He said that it was possible that some of the oil made it out to the river. Mr. Howard said that the MSD laboratory did the analysis on the samples that he collected. The results indicate Aroclor 1254 in the oil at 47 parts per million.

I then asked Mr. Howard if he was familiar with the history of the Mound Street site. He related that there was a rumor that the basement of the former Union Electric building, which occupied part of the site, was said to be full of old transformers, and was claimed to be an EPA (U.S. Environmental Protection Agency) Superfund site where a "poor cleanup" was performed before the building was demolished.

Mr. Howard further said that he believes that the City of St Louis may now own the former Union Electric property, and Inspector Charles Gay with the St. Louis Fire Department would know more about the site, because he has been working on the site for some time.

ACTION TAKEN:

I phoned the St. Louis City Fire Department (314/298-1900) and asked to speak with Mr. Charles Gay. The secretary there said that Mr. Gay was out of the office, but would leave a message for him to call me. I then called Ms. Anne Olberding, EPA Region VII, and asked if she was aware of an EPA cleanup in the vicinity of the Mound and First Streets in St. Louis. Ms. Olberding said that location did not ring a bell, but she would search Cerclis according to site latitude and then send me the results.

In addition, I also spoke with Mr. Bob Krager, MDNR, Hazardous Waste Program, and asked if he was aware of any Superfund activities at the former Union Electric property at Mound Street. Mr. Krager said that he was unaware of any activities at that particular location and suggested that I contact Mr. Bob Jackson at EPA Region VII. I phoned Mr. Jackson who said that he would check the TOSCA records. Mr. Jackson called back and informed me that he could find nothing in the records about an EPA cleanup at the Union Electric power plant near Mound Street.

FINAL RESULTS:

This information will be used in the Mound Street PCB preliminary assessment.

Don Falls

Don Falls
Environmental Specialist

DF:so

Sverdrup **TELECON MEMO** Reference 6

Memo No. 1 Job No. 10865-376303

Date Nov 21 19 95 Time 9:00 AM - 9:25

Between (Svc) Mike Mau Placed ✓ Rec'd

And Howard Edmond Tel (314) 436-8735

Of St. Louis Metropolitan Sewer District (MSD)

Subject Mound Street PCBs / USTs / Manhole Sampling

① - old granary building south end - found an old UST, got in manhole & floodwalls TRRA

- never could really determine exact source

- Removal was turned over to city of St. Louis & Railroad - was on railroad property

- Chief Horne - Fire Inspector

(may have city Block & Lot #s) 289-1900

(worked with fire marshall - Railroad ↳ N&W or Ill. Central

- little street between granary & pump station ↳ operates only during rain

- floodwall manholes - not sewers but underground drainage keeps

- no seepage of oil from 1993 that he knows of - no complaints

DNR & EPA taken care back then

- samples to identifying source / 768-6200 permit dept. MSD

City - permit office Hampton Ave

- City Block & Lot #

F-GA1 (12) (13) (14)

floodwall → manhole Nothing to do with MSD

- Corp of Engineers need to check

Original:

cc:

Sverdrup **TELECON MEMO**

Memo No. 1 Job No. 10865-370303

Date Nov-21 19 95 Time 9:00 m

Between (S v C) Mike May Placed ✓ Rec'd

And Howard Edmond Tel (314) 436-8735

Of St. Louis M.S.D.

Subject Mound Street PCBs / USTs & other sources / pump septic

City Block & Block #

Old # 622-3313 - House Numbering
↳ (Address)
Then they can get you block #

- pumps to Bissell pt. Treatment
  - 10 E Grand
  - 3 or 4 miles
  - But
  - goes to interceptor sewer first then to treatment plant ("any bodies guess as to how it really works!")

Boundary
- Dakota to N. North comes to Bissell Point Plant
- goes west to Kings Highway
- out airport

- Record of sampling under FOI
  FOT - need to write letter

Howard Edmond's boss ← Bernard Rains
Director of Environmental Compliance of MSD
No. 10 E Grand
St. Louis, MO 63147

Original:
cc:

Sverdrup **TELECON MEMO**

Memo No. 1 Job No. 10865-370303

Date Nov-21 19 95 Time 9:00 m

Between (S v C) Mike May Placed ____ Rec'd ____

And Howard Edmond Tel (314) 436-8735

Of St. Louis M.S.D.

Subject Mound Street PCBs / USTs & other sources / pump system

Summary

- reiterated that the manholes were not "storm drainage" related. The pump station only pumps under circumstances of exceedingly heavy precipitation or if the River level is at or exceeding flood stage. Manholes are for protection of the flood wall (underground H,O) not storm sewer.
- If there would have been oil recognized since 1993 then Howard's crews would have definitely reported the oil in the manholes or pumping station
- call Chief Horne first, before calling city for lot & block #s - may have this information already.

Original:
cc:

FILE: Mound Street PCB's

Reference 7

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: November 22, 1993

TO: Mound Street PCB Site

FROM: Don Falls, Environmental Specialist
Site Evaluation Unit, Superfund Section
Hazardous Waste Program

SUBJECT: Mound Street PCB Site Reconnaissance

On November 11, 1993, I traveled to the Mound Street PCB site to conduct a site reconnaissance and meet with Mr. Daryl Bowles and Mr. David Gehm of the GEHM Corporation. The site is located at Mound and Brooklyn Streets, on the Riverfront, in downtown St Louis. I arrived at the site at 8:35 a.m. and first made a vehicle reconnaissance of the area within 1/4 mile of the site. The weather was clear and sunny with a temperature of approximately 55 degrees.

At 9:00 a.m., I met with Mr. Bowles and Mr. Gehm at the old terminal building. They were at the site to oversee the removal of waste oil that had been temporarily stored on-site from an earlier underground storage tank removal. I first asked Mr. Bowles if he could show me where the Metropolitan Sewer District pump station was located. He directed me to the pump station located at the end of Brooklyn Street, approximately 400 feet from the old terminal building. The pump station is located next to the flood wall and is surrounded by a security fence. I noted that five 55-gallon drums marked as waste oil and PCBs (Polychlorinated Biphenyl) were stored against the pump station south wall.

I then asked Mr. Bowles if he would show me exactly where the boring attempts were made that he had referred to in his activities report. We walked across Mound Street to an area immediately east of the old terminal building. This area appeared as an anomaly on the IR/T (Infrared Thermograph) survey completed in August 1993 by Entech Engineering as part of GEHM Inc.'s investigation of the site. Mr. Bowles explained that the drilling attempts were unsuccessful due to solid rock, cinder block, and other debris being encountered at a depth of about five feet. Mr. Bowles informed me that a long-time employee of Apex Fuel Company claims that Union Electric Company once used a building at this particular site to store transformers. The

basement of this building was said to be full of waste oil when the building was demolished several years ago. Mr. Bowles indicated that the foundation or basement of this demolished building might explain the IR/T anomaly.

I asked Mr. Gehm about the capabilities of the IR/T and if it could image at depths of several feet. He said that he thought that the IR/T could image areas of dissimilar makeup to a depth of about 20 feet. Mr. Bowles added that buried objects as small as five-gallon buckets have been identified with the instrument. Mr. Gehm said that the IR/T images are taken using a lift bucket and are taken at a height of about 30 feet above the ground.

At 10:15 a.m., Mr. Gehm and Mr. Bowles said that they had to leave to finish with the removal of the waste oil. I thanked them for their assistance and told them that I would stay in touch with them. After taking more photographs of the area, I then left the site at approximately 11:00 a.m.

DF:so

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2
LI USING ENGINEER'S SCALE (1/60)

SITE NAME: Mound Street PCB's CERCLIS #: MO0000009367

AKA: _____ SSID: _____

ADDRESS: 100 Mound Street

CITY: St. Louis STATE: MO ZIP CODE: 63102

SITE REFERENCE POINT: Center of former Union Electric Property.

USGS QUAD MAP NAME: Granite City, IL TOWNSHIP: 45 (N)/S RANGE: 7 (E)/W

SCALE: 1:24,000 MAP DATE: 1954 SECTION: ___ 1/4 ___ 1/4 ___ 1/4

MAP DATUM: (1927) 1983 (CIRCLE ONE) MERIDIAN: 5th Principal

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 90 ° 07 ' 30 " LATITUDE: 38 ° 37 ' 30 "

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 90 ° 10 ' 00 " LATITUDE: 38 ° 37 ' 30 "

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRID LINE TO SITE REF POINT: 195

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 64 . 42 "

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 1 ' 4 . 42 "

D) ADD TO STARTING LATITUDE: 38 ° 37 ' 30 . 00 " + 1 ' 4 . 42 =

SITE LATITUDE: 38 ° 38 ' 34 . 00 "

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUDE LINE TO SITE REF POINT: 173

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 57 . 15 "

C) EXPRESS IN MINUTES AND SECONDS (1'= 60"): 0 ' 57 . 15 "

D) ADD TO STARTING LONGITUDE: 90 ° 10 ' 00 . 00 " + 0 ' 57 . 15 =

SITE LONGITUDE: 90 ° 10 ' 57 . 15 "

INVESTIGATOR: Don Falls DATE: 12/13/93

Reference 9

ACTIVITIES REPORT
TRRA of St. Louis
First & Mound Streets Site
MDNR Spill Report
07143 - KB - 1331

The GEHM Corporation
1417 Bingham Rd.
P.O. Box 65
Boonville, MO 65233

THE GEHM Corporation

TABLE OF CONTENTS

ACTIVITIES REPORT
TRRA of St. Louis
First & Mound Streets Site
MDNR SPILL REPORT # 07143 - KB -1331

1.0 PROJECT SYNOPSIS

This is a report of activities and findings resulting from the discovery of oils seeping into a pump station operated by Metropolitan Sewer District (MSD) in St. Louis, Missouri. On July 14, 1993, MSD reported this situation to the MDNR. MSD analytical information revealed PCB levels of less than 50 ppm in the oils seeping into the pump station. Additionally, a sample was obtained from waste oil contained in an underground storage tank present in the area, and owned by Terminal Railroad Association of St. Louis (TRRA). The St. Louis Fire Department (SLFD) notified TRRA on July 28, 1993 and requested the contents of the tank be removed. TRRA was unaware of the existence of the tank prior to notification by the SLFD.

In response to the situation, TRRA initiated and completed the following tasks:

- **Contents of the tank were removed** on August 4, 1993. The tank was completely cleaned and freed of all liquids. The material was containerized on-site in 55 gallon drums for characterization and disposal.

- An **Infrared Thermographic Survey was conducted** of the area in an attempt to characterize leak plumes or trails.

- **Three borings** were advanced in the immediate area to determine subsurface soil conditions. Two soil samples were obtained from the site and submitted to a qualified laboratory for chemical analysis.

This report documents the response efforts and findings of the investigatory activities.

2.0 DESCRIPTION OF SURROUNDING PROPERTIES

The property is bordered by gravel roads on the north, east, and south sides. To the west is a gravel covered area containing truck scales and operated by Apex Oil Co. Across the road (Mound Street), and to the south is an empty lot formerly occupied by Union Electric Company of Missouri. To the east are several sets of railroad tracks immediately adjacent to the flood wall. To the north (across Brooklyn Street), is a facility operated by Continental Cement Company (apparently used for cement loading/unloading). The MSD Pump Station is situated adjacent to the flood wall and approximately 400-500 ft. north-east of the tank location. Southwest of the property (across Mound street) is a bulk petroleum storage/distribution facility. This facility is characterized by several large

(>500,000 gallon capacity) above ground storage tank systems.

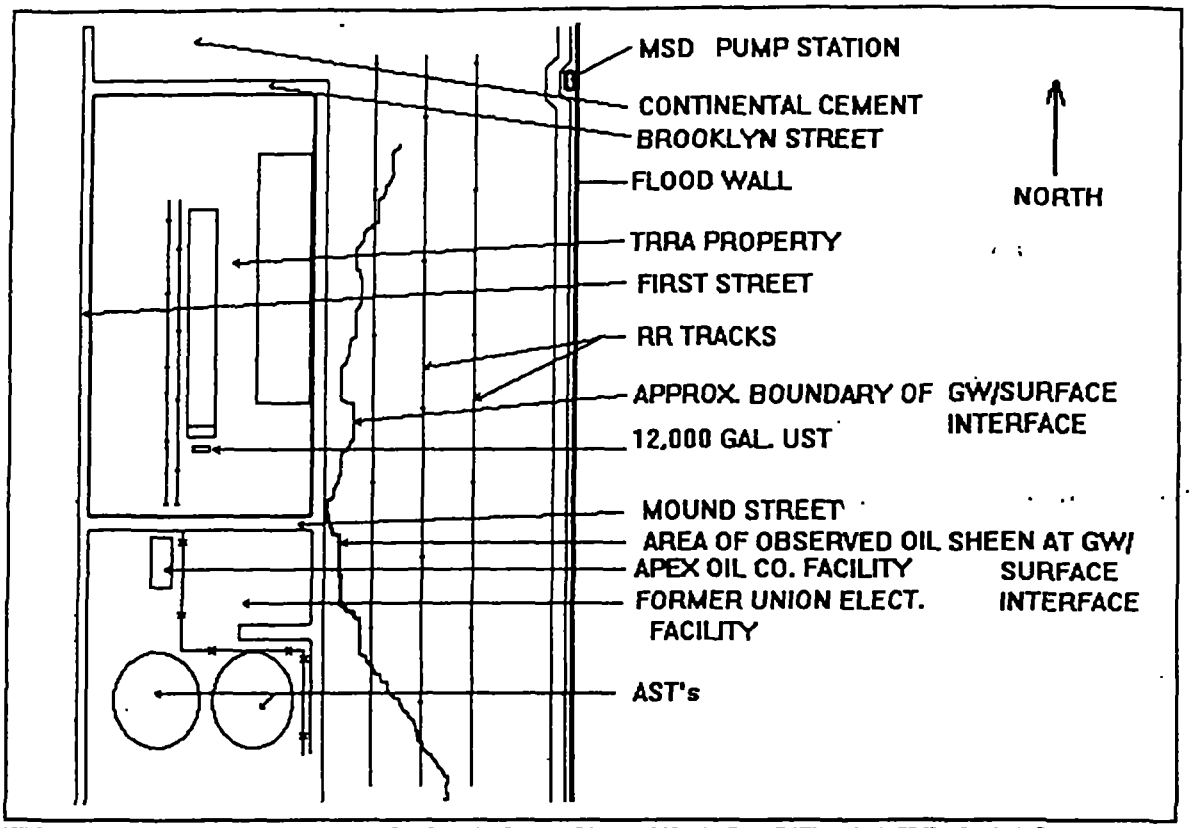


FIGURE 1: AREA SKETCH SHOWING PROPERTY AND SURROUNDING PROPERTIES. (APPROX. SCALE: 1"=180')

Numerous combined sewer, water and other utilities exist (some abandoned) throughout the area which were not completely defined for this report. Utilities which were obvious from site observations and from conversations with MSD personnel included a sewer line adjacent to the TRRA property along Mound Street, and a main line extending west from the pump station. Several underground utility lines run parallel to the railroad tracks and flood wall in a north - south direction. A TRRA property drawing identified a vitrified pipe drain traversing the site from approximately the tank location to the southeast corner of the property (copy provided in attachments). No attempts were made intrusively to locate and verify the existence of this pipe, however, IR/T did not provide a signature typical of an underground conduit acting as a migratory pathway.

A slight gradient (approx. 1:20) typifies the immediate area from west to east.

Groundwater was encountered on the site at a depth of 8 to 8.5 feet from surface. However, site activities were conducted one day following the crest of the Mississippi River on August 1, 1993. Evidence of extreme hydrostatic pressure in the area was observed by water shooting approximately 10 feet high from a Corps of Engineers piezometer located adjacent to the flood wall (approximately 400 feet from the UST), and by a groundwater/surface interface along the area between the eastern most road and the railroad tracks (see Figure 1). Observations of this interface revealed an apparent petroleum sheen present in many areas where the groundwater was seeping from the

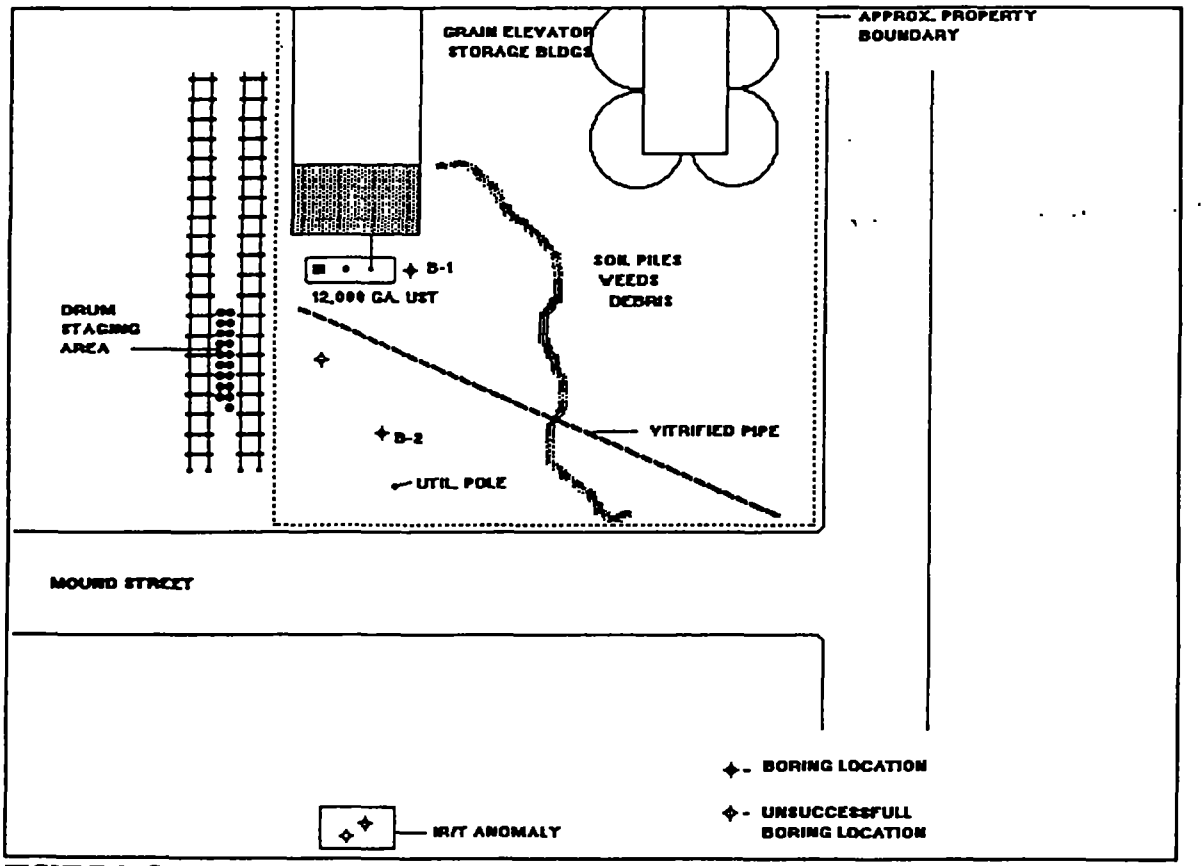


FIGURE 2: SITE SKETCH DEPICTING PROMINENT FEATURES. (APPROX. SCALE: 1"=200')

interface. A sheen was observed in an area extending from a line approximately even with the south side of the TRRA property, south to a line approximately even with the south side of the former Union Electric property.

3.0 SITE DESCRIPTION

The parcel of property identified as TRRA property and where the UST exists, measures approximately 150 ft. by 340 ft. The property is generally situated in a north-south direction between the ends of Mound and Brooklyn Streets, St. Louis County, St. Louis, Missouri. Two structures are on the property which appear to be abandoned grain elevator and storage/handling structures constructed of reinforced concrete. The larger of the two structures measures approximately 40 ft. by 160 ft. and is situated along the east side of the property. The smaller structure measures approximately 20 ft. by 170 ft., is situated along the west side of the property with the UST located at the south end. A railroad siding runs adjacent to this smaller structure as well.

4.0 SITE ACTIVITIES

The purpose of the site activities was twofold. First was in response to the requests of the SLFD assuming the tank as the most likely source of the contaminants entering the MSD pump station, and secondly, to assess the most likely migratory pathway of the contaminants for the purpose of determining the most effective abatement measures.

4.1 Tank Contents Removal.

On August 4, 1993, field personnel were mobilized to the site to conduct removal of the tank contents and cleaning of the tank. This procedure was accomplished by Environmental Operations, St. Louis, Missouri. A vacuum truck was used to pump material from the tank then placed in 55 gallon drums, staged on site. The tank was entered, following Confined Space Entry Procedures to remove and clean the remaining product and debris. Samples of the waste were obtained and submitted to American Interplex Corporation for analyses and summarized in the following table.

TANK WASTE ANALYSIS SUMMARY			
PARAMETER	UNIT	RESULT	METHOD
IGNITABILITY	°F	Non-ignitable below 212	EPA 1010
TOTAL HALIDES	mg/Kg	880	EPA 9020
PCB	mg/Kg	<10	EPA 600/4-81/045
HEAT CONTENT	BTU/lb	9480	ASTM D240
TCLP:			EPA 1311 (FEDERAL REGISTER/VOL. 57, NO. 227/NOVEMBER 24, 1992), 3010A, 6010A, 7470.
SILVER	mg/l	<.007	
ARSENIC	mg/l	<.02	
BARIUM	mg/l	2.1	
CADMIUM	mg/l	.019	
CHROMIUM	mg/l	.0096	
MERCURY	mg/l	<.01	
LEAD	mg/l	<.1	
SELENIUM	mg/l	<.02	

Note: Analysis parameters were selected for the purpose of determining disposal options.

Sixteen drums (approximately 880 gallons) of sludge/liquid, and one drum containing solid debris were generated. The waste was dual phased consisting of 60% ethylene glycol and 40% waste oils (based on appearance).

The tank system was constructed of steel and riveted with the top of the tank at ground surface. An eighteen inch diameter manway centered the tank with a two inch line extending from the tank, above grade, through the wall of the nearby structure. Tank dimensions were 10.5' dia., and 18.5' in length providing a capacity of 12,000 gallons. Tank depth was at 10.5 feet from surface.

4.2 Infrared Thermographic Survey (IR/T).

An Infrared Thermographic Survey was conducted in the immediate area on August 17, 1993 by EnTech Engineering, Inc. Infrared Thermography (IR/T) was selected to be performed at this site due to its ability to provide on-site, real time data. IR/T measures the heat energy emitted from the earths surface stored during daylight hours. Areas of dissimilar chemical or physical make-up (such as petroleum contaminated soils versus non-petroleum contaminated soils) emits stored heat energy at different rates. IR/T is used to identify potential contaminated areas in relation to a known source such as an Underground Storage Tank, Pipeline, etc.

The results of the IR/T investigation for this site did not portray evidence of a leak

plume, trail or other leak signature which would suggest a release capable of migrating from the UST to any point off-site.

The investigation did, however, indicate an anomaly on the former Union Electric Company property south of the TRRA property (see Figure 2). An area measuring approximately 10' x 10' was identified. IR/T cannot identify the cause of an anomaly without either an intrusive investigation or knowledge of a potential source of an anomaly. At the request and permission of Inspector Charles Gay (SLFD), this area was investigated and described in section 4.3.

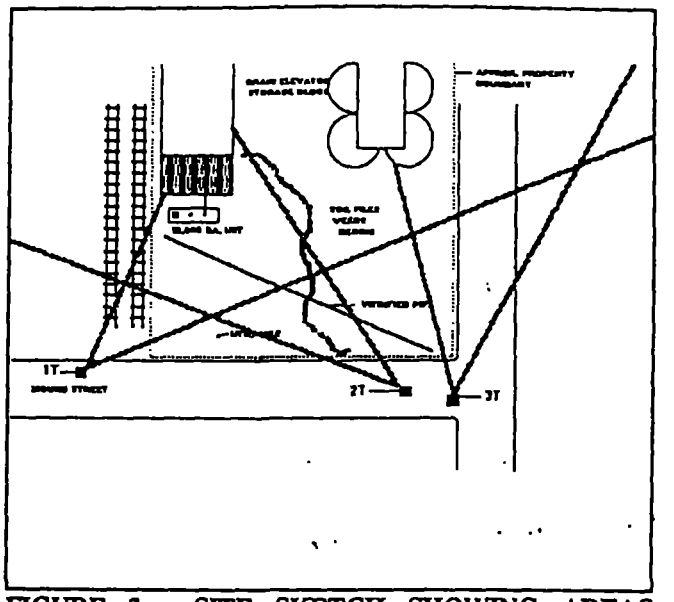
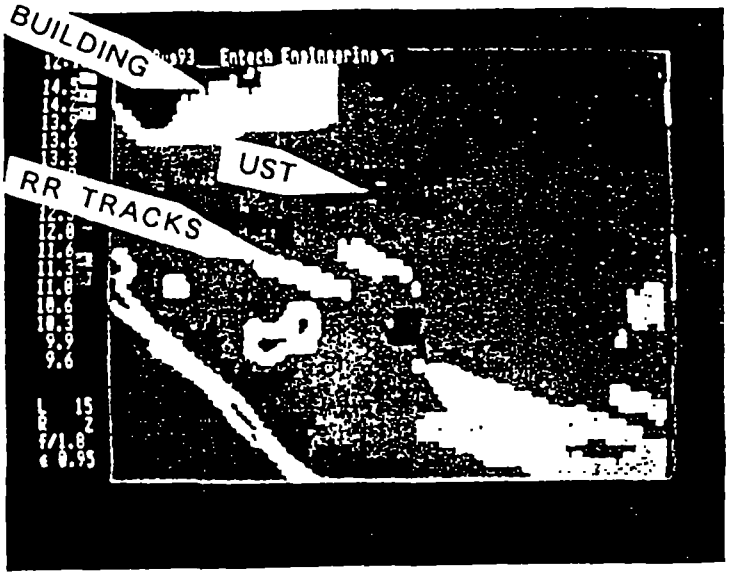


FIGURE 3: SITE SKETCH SHOWING AREAS DEPICTED ON IR/T THERMOGRAMS.

From the IR/T data generated, three views were selected for presentation in this report. These views are depicted on the following site sketch and the thermograms are presented on the following pages. The data was gathered between 11:00 p.m and midnight from a lift truck at approximately 30'. The corresponding photographs are provided for the purpose of reference.

EnTech
gineering, Inc.
PECIALISTS IN NON-DESTRUCTIVE TESTING • 111 Marine Lane • St. Louis, MO 63146 • U.S.A. • (314) 434-5255 • FAX: (314) 434-3270



VISUAL IMAGE NUMBER: 1V THERMOGRAM IMAGE NUMBER: 1T

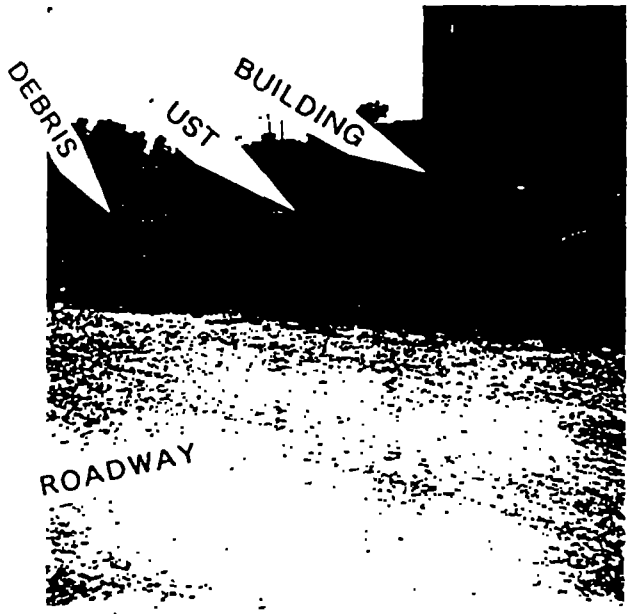
LOCATION: Terminal R.R.
1st and Mound Street
St. Louis, Missouri

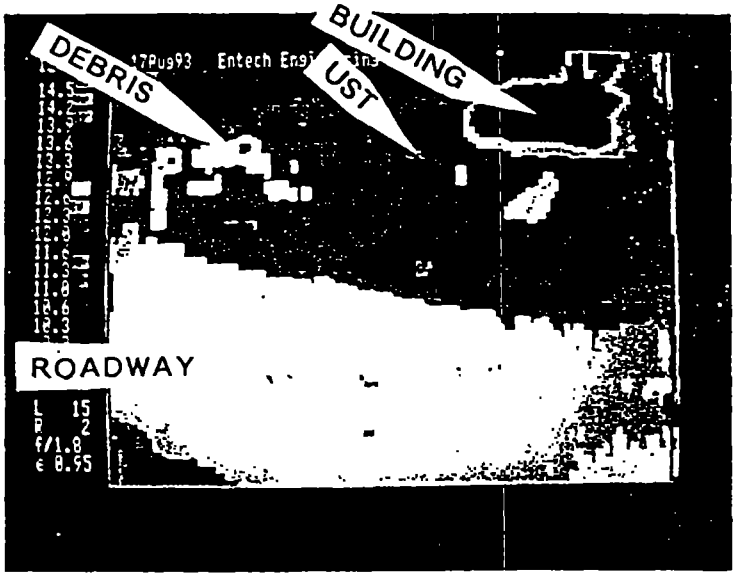
ITEM: Example data image

LOCATION: Refer to drawing item #1

INVESTIGATION DATE: 8/17/93

EnTech Engineering, Inc.
SPECIALISTS IN NON-DESTRUCTIVE TESTING • 111 Marine Lane • St. Louis, MO 63146 • U.S.A. • (314) 434-5255 • FAX: (314) 434-3270





VISUAL IMAGE NUMBER: 2V THERMOGRAM IMAGE NUMBER: 2T

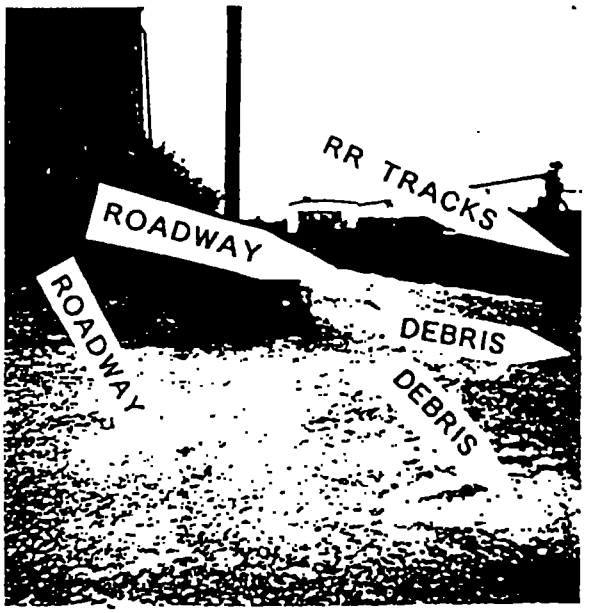
LOCATION: Terminal R.R.
1st and Mound Street
St. Louis, Missouri

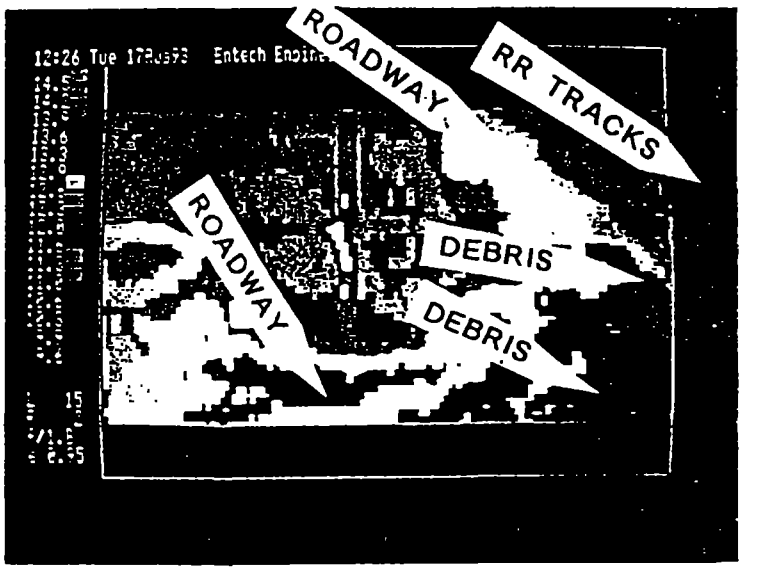
ITEM: Example data image

LOCATION: Refer to drawing item #2

INVESTIGATION DATE: 8/17/93

EnTech Engineering, Inc.
SPECIALISTS IN NON-DESTRUCTIVE TESTING • 111 Marine Lane • St. Louis, MO 63146 • U.S.A. • (314) 434-5255 • FAX: (314) 434-3270





VISUAL IMAGE NUMBER: 3V THERMOGRAM IMAGE NUMBER: 3T

LOCATION: Terminal R.R.
1st and Mound Street
St. Louis, Missouri

ITEM: Example data image

LOCATION: Refer to drawing item #3

INVESTIGATION DATE: 8/17/93

4.3 Drilling/Sampling.

On August 4, 1993, a drilling crew was mobilized to the site and a total of five boring attempts were made. Three attempts were unsuccessful with auger refusal at five feet. One unsuccessful attempt was made on site approximately 30 feet south of the west end of the tank. Solid debris was encountered to a depth of 5 feet and the attempt was abandoned. At the request and permission of Inspector Charles Gay (SLFD), two other attempts were made in the area of the IR/T anomaly discovered within the former Union Electric Property. Both attempts were abandoned at a depth of 5 feet encountering solid rock debris.

The two successful attempts were located at the east (down gradient) end of the tank location, and approximately 37.5 feet south of the tank location. One sample was obtained from each of these borings and submitted to a qualified laboratory per analysis presented in the following table

SAMPLE RESULTS SUMMARY TABLE
(in ppm)

I.D	LOCATION	TPH	PCB	BENZENE	TOLUENE	E. BENZENE	XYLENES
01	10 FT. DEPTH	67	<0.05	<0.002	<0.002	<0.002	<0.002
02	8 FT. DEPTH	23	<0.05	<0.002	<0.002	<0.002	<0.002

5.0 SUMMARY/DISCUSSION

Analysis of the tank contents reveal a mixture of Ethylene Glycol (Antifreeze) and Waste Oil and should be disposed of in accordance with State and Federal Regulations.

The tank is scheduled for removal the first of October, 1993. Removal will be in accordance with MDNR UST Closure Guidance.

Results of site activities suggest the tank as the source of the oil seepage into the pump station unlikely for the following reasons:

- The pump station is located topographically upgradient from the UST.
- Soil sample results are not indicative of a release sufficient to supply free product from the UST to the pump station.

- IR/T failed to reveal anomalies on or around the site indicative of a leak plume, trail or signature.

- Water was not present in the tank. (Given the depth to groundwater 8.5', and depth to the tank bottom, 10.5', and the extreme amount of hydrostatic pressure in the area.)

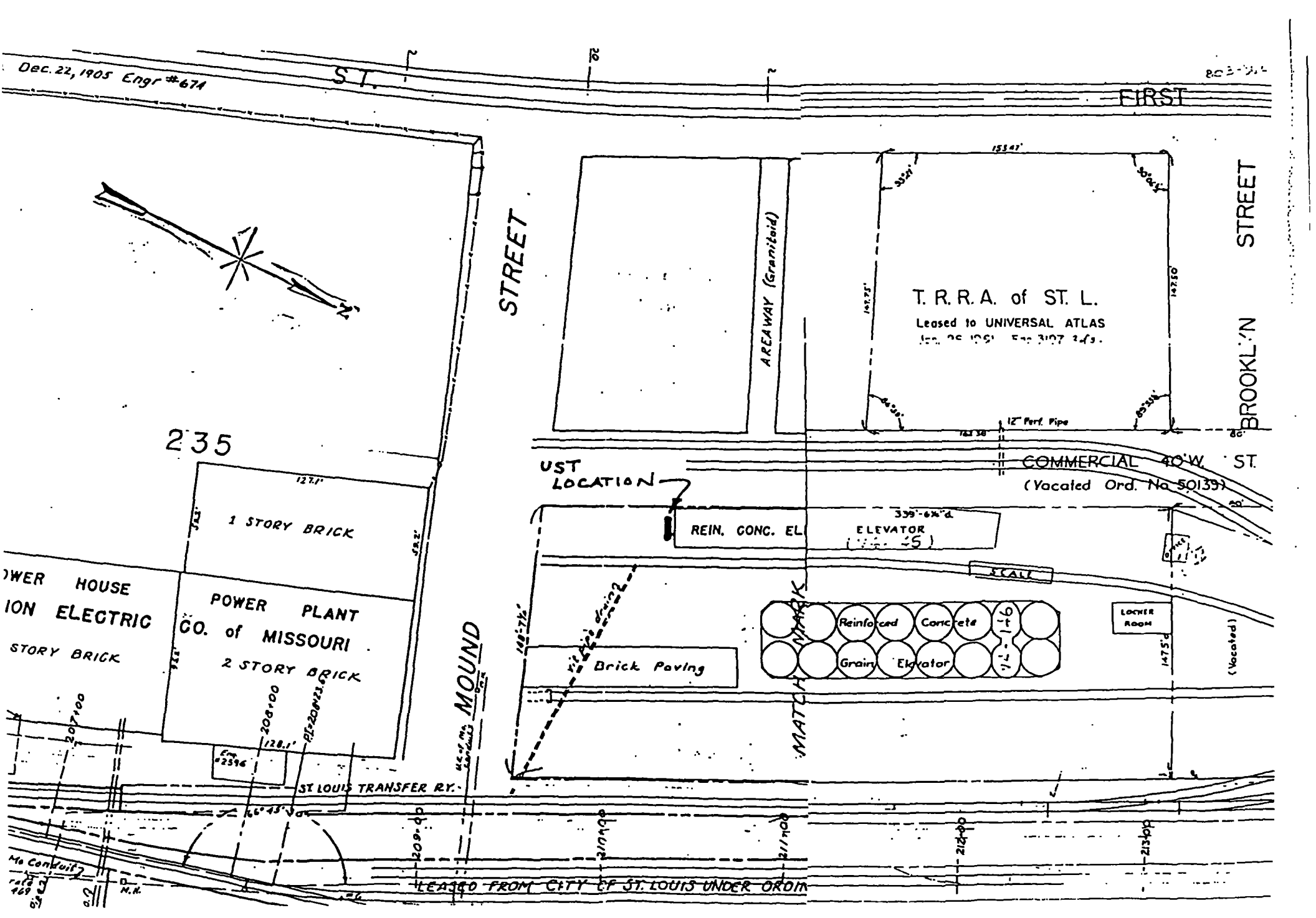
Additionally, the presence of the sheen at the groundwater/surface interface suggests a problem much more widespread than that of a single source. It is likely, the rising groundwater from the effects of the flooding in the immediate area had a direct affect on the sudden presence of the oil in the pump station.

Report Distribution List:

1. Ms. Kris Davidson, Environmental Specialist
   Missouri Department of Natural Resources
   Hazardous Waste Program - Superfund Section
   P.O. Box 176
   Jefferson City, Missouri 65102

2. Mr. Charles Gay, Fire Inspector
   St. Louis Fire Department
   Fire Prevention Bureau
   1421 N. Jefferson
   St. Louis, Missouri 63106

3. Mr Bob Ripper
   Terminal Railroad Association of St. Louis
   700 North Second Street
   St. Louis, Missouri 63102


Dec. 22, 1905 Engr #671
ST.
FIRST
STREET
AREAWAY (Granitoid)
T. R. R. A. of ST. L.
Leased to UNIVERSAL ATLAS
BROOKLYN STREET
235
1 STORY BRICK
POWER PLANT
CO. of MISSOURI
2 STORY BRICK
POWER HOUSE
ION ELECTRIC
STORY BRICK
UST LOCATION
REIN. CONC. EL
ELEVATOR
COMMERCIAL 40' W. ST.
(Vacated Ord. No 50139)
SCALE
Reinforced Concrete
Grain Elevator
LOCKER ROOM
(Vacated)
Brick Paving
MOUND
MATCH FACTORY
ST LOUIS TRANSFER RY.
LEASED FROM CITY OF ST. LOUIS UNDER ORDI

GHEM CORPORATION
RAIL ROAD - ST. LOUIS

DEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) △ = BLOWS PER FOOT 10 20 30 40 50
	Black Silty Soils W/Const. Debris and Red Brick Debris to 10'		
5			
	Groundwater 8.5'		
		SS 10'	
10	Terminate Boring 10'		
15			
20			
25			
30			
35			

GROUNDWATER DATA

COUNTERED AT 8.5' FEET

_____ FEET AFTER _____ HOURS

_____ FEET AFTER _____ HOURS

_____ FACE WATER NOT ENCOUNTERED DURING DRILLING

Environmental Operations, Inc.
2649 Postaboell St. Louis MO 63118

DATE: 3/5/93 | PROJECT NO.: 5780

DRILLER: GB | LOGGER: GB | AUGER: SF

SURFACE ELEVATION: | HOLLOW STEM:

Boring No. .01

DEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) △ = BLOWS PER FOOT 10 20 30 40 50
	Black Silty Soil w/Const. Debris to 3'		
	Refusal 3'		
5			
10			
15			
20			
25			
30			
35			

GROUNDWATER DATA

ENCOUNTERED AT _____ FEET

AT _____ FEET AFTER _____ HOURS

AT _____ FEET AFTER _____ HOURS

_____ FREE WATER NOT ENCOUNTERED DURING DRILLING

Environmental Operations, Inc.

3645 Forestwood St. Louis MO 63110

DATE: 8/5/93 | PROJECT NO.: 5780

DRILLER: GB | LOGGER: GB | AUGER: SF

SURFACE ELEVATION: | HOLLOW STEM:

Boring No. .02

DEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) △ = BLOWS PER FOOT 10 20 30 40 50
	Black Silty Clay to 8'		
5		SS x 2@8'	
	Terminate Boring 8'		
10			
15			
20			
25			
30			
35			

GROUNDWATER DATA

ENCOUNTERED AT 8.5' FEET

AT _____ FEET AFTER _____ HOURS

AT _____ FEET AFTER _____ HOURS

_____ FREE WATER NOT ENCOUNTERED DURING DRILLING

Environmental Operations, Inc.

3645 Pestalozzi St. Louis MO 63118

DATE: 8/5/93 | PROJECT NO.: 5780

DRILLER: GB | LOGGER: GB | AUGER: SF

SURFACE ELEVATION: | HOLLOW STEM:

Boring No. .03

DEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) △ = BLOWS PER FOOT 10 20 30 40 50
	Black Silty Clay w/Const. Debris to 8'		
5		SS 8'	
	Terminate Boring 8'		
10			
15			
20			
25			
30			
35			

GROUNDWATER DATA

ENCOUNTERED AT _____ FEET

AT _____ FEET AFTER _____ HOURS

AT _____ FEET AFTER _____ HOURS

_____ FREE WATER NOT ENCOUNTERED DURING DRILLING

Environmental Operations, Inc.

2649 Postalozzi St. Louis MO 63118

DATE: 8/5/93 | PROJECT NO.: 5780

DRILLER: GB | LOGGER: GB | AUGER:

SURFACE ELEVATION: | HOLLOW STEM: H.S

Boring No. .04

DEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) △ = BLOWS PER FOOT 10 20 30 40 50
	Brown Clay w/Rock Debris To 3'		
	Refusal 3'		
5			
10			
15			
20			
25			
30			
35			

GROUNDWATER DATA

ENCOUNTERED AT _____ FEET

_____ FEET AFTER _____ HOURS

_____ FEET AFTER _____ HOURS

_____ FREE WATER NOT ENCOUNTERED DURING DRILLING

Environmental Operations, Inc.
3649 Pestalozzi St. Louis MO 63118

DATE: 8/5/93 | PROJECT NO.: 5780

DRILLER: GB | LOGGER: GB | AUGER: SF

SURFACE ELEVATION: | HOLLOW STEM:

Boring No. .05

DEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) △ = BLOWS PER FOOT 10 20 30 40 50
	Brown Clay w/Const. Debris to 5'		
5	Refusal 5'		
10			
15			
20			
25			
0			
5			

GROUNDWATER DATA

ENCOUNTERED AT _____ FEET

_____ FEET AFTER _____ HOURS

_____ FEET AFTER _____ HOURS

_____ FREE WATER NOT ENCOUNTERED DURING DRILLING

Environmental Operations, Inc.

2649 Pestalozzi St. Louis MO 63118

DATE: 8/5/93 | PROJECT NO.: 5780

DRILLER: GB | LOGGER: GB | AUGER: SF

SURFACE ELEVATION: | HOLLOW STEM:

Boring No. .06

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060

The Gehm Corporation (C-1270)
Post Office Box 65
Boonville, MO 65233

August 16, 1993

ATTN: Mr. Daryl Bowles

Control No. 3520

Sample Description: Two (2) soil received on 8/9/93
Re: Terminal Rr Assoc. of St. Louis Mound & First Streets
(Site) St. Louis, MO Project No. 0116
P.O. No. 080-693 116

Result:

Parameter	Unit	01 8-4-93 0930	02 8-4-93 0945
Total Petroleum Hydrocarbons	mg/Kg	67	23
PCB	mg/Kg	<0.05	<0.05
Benzene	mg/Kg	<0.002	<0.002
Toluene	mg/Kg	<0.002	<0.002
Ethylbenzene	mg/Kg	<0.002	<0.002
m- & p-Xylenes	mg/Kg	<0.002	<0.002
o-Xylenes	mg/Kg	<0.002	<0.002

Method: Modified EPA 418.1, EPA 3550, 8080, 5030, 8020

Remark: Results are presented on an as-received basis.

Enclosure: Chain of custody

AMERICAN INTERPLEX CORPORATION

MWM/tj

By Michael W. McNerlin
Michael W. McNerlin
Laboratory Director

GEHM Corporation

REQUEST

Submitted by: (Name/Telephone/Date)	Lab: (Name/Address/Telephone)	Client Name/Project Location: (Contact/Phone #)
THE GEHM CORPORATION 1417 BINGHAM RD., P.O. BOX 65 BOONVILLE, MO 65233-0065 DARYL BOWLES 816-882-3485	AMERICAN INTERPLER CORP. 8600 KANIS RD. LITTLE ROCK, AR. 72204-2322	TERMINAL RR ASSOC. OF ST. LOUIS MOUND & FIRST STREETS (SITE) ST. LOUIS, MO. BOB RIPPER 314-539-4712

Project No.:	Applicable Regulatory No.:	P.O. #: (For Lab)	Samplers Signature:
0116	07143-KB-1331	080-693 116	Daryl K. Bowles

	Sample ID	Matrix	Preservative	Date	Time	ANALYSIS REQUEST: BTEX (8020)	TPH (418.1)	TPH MO.MOD. (418.1)	OA-1 (SOWA)	OA-2 (SOWA)	TOG (413.1)	PCB CONT. (8080)	OTHER	OTHER	OTHER
(1)	01	SOIL	ICE	8-4-93	0930	X		X				X			
(2)	02	SOIL	ICE	8-4-93	0945	X		X				X			

COMMENTS/SPECIAL INSTRUCTIONS:
- NORMAL TURN AROUND
- PLEASE FAX RESULTS TO: DARYL BOWLES 816-882-5766

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Daryl K. Bowles	8-6-93	1100	Martha Sirie	08-07-93	0815
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060

The Gehm Corporation (C-1270)
Post Office Box 65
Boonville, MO 65233

August 20, 1993

ATTN: Mr. Daryl Bowles

Control No. 3586

Sample Description: One (1) glycol/oil collected by Environmental Operations received on 8/12/93
Re: Gehm Corp 0111

Result:

Parameter	Unit	5780	Regulatory Level
Ignitability	°F	Non-Ignitable below 212	-
Toxicity Characteristic Leaching Procedure			
Solids	%	100	-
Silver	mg/l	<0.007	5.0
Arsenic	mg/l	<0.2	5.0
Barium	mg/l	2.1	100.0
Cadmium	mg/l	0.019	1.0
Chromium	mg/l	0.0096	5.0
Mercury	mg/l	<0.01	0.2
Lead	mg/l	<0.1	5.0
Selenium	mg/l	<0.2	1.0

Method: EPA 1010, EPA 1311 (Federal Register/Vol. 57, No. 227/November 24, 1992), 3010A, 6010A, 7470

Enclosure: Chain of custody

AMERICAN INTERPLEX CORPORATION

SL/tm

By Steven Lovell
Steven Lovell
Technical Director

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060

The Gehm Corporation (C-1270)
Post Office Box 65
Boonville, MO 65233

August 20, 1993

ATTN: Mr. Daryl Bowles

Control No. 3521

Sample Description: One (1) oil/glycol received on 8/9/93
P.O. No. 050593 DB

Result:

Parameter	Unit	TANK WASTE 8-04-93 1000
Total Halides	mg/Kg	880
PCB	mg/kg	<10
Heat Content	BTU/lb	9480

Method: EPA 9020, 600/4-81/045, ASTM D240

Remark: As requested analysis for Toxicity Characteristic Leaching Procedure and Flash Point was performed on additional sample referenced American Interplex Corporation Control No. 3586. Analysis performed on oil layer only.

Enclosure: Chain of Custody

AMERICAN INTERPLEX CORPORATION

SL/tm

By Steven Lovell
Steven Lovell
Technical Director

GEHM Corporation

REQUEST

Submitted by: (Name/Telephone)	Lab: (Name/Address/Telephone)	Client Name/Project Location: (Contact/Phone #)
DARYL R. BOWLES, CHMM THE GEHM CORPORATION P.O. BOX 65 BOONVILLE, MO 65233 (816) 882-3485	American Interplex Corporation 8600 Kanis Rd. Little Rock, AR 72204-2322	Terminal Railroad Association of St. Louis First & Mound Streets St. Louis, MO Mr. Bob Ripper (314) 539-5198

Project No.: 0116	Applicable Regulatory No.: 07143-KB-1331	P.O. #: (For Lab) 050693 DB	Samplers Signature: Daryl R. Bowles

Sample ID	Matrix	Preservative	Date	Time	ANALYSIS REQUEST												
					BTEX (8020)	TPH (418.1)	TPH MO.MOD (418.1)	OA-1 (IOWA)	BTU VALUE	pH	TOX (CHLORINE)	FLASH POINT (CC)	PCB CONTENT (8080)	TCLP METALS*	OTHER	OTHER	OTHER
TANK WASTE	SLUDGE	N/A	05-04-93	1000					X		X	X	X	X			

COMMENTS/SPECIAL INSTRUCTIONS:
* METALS INCLUDED ARE: ARSENIC, BARIUM, CADMIUM, CHROMIUM, LEAD, MERCURY, SELENIUM, SILVER.

PLEASE FAX RESULTS TO: 816-882-5766

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Daryl R. Bowles	5-6-93	1100	Kathie Sivia	05-07-93	0915
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

[redacted]

CUSTODY TRANSFER RECORD/LABORATORY WORK REQUEST

COMPANY Environmental Operations CONTACT Michael Lechner PROJECT NO. 5780

ADDRESS 2649 Pestalozzi DATE 8-11-93 P.O. NO.

CITY/STATE/ZIP St Louis MO 63118 DUE DATE

PHONE (314) 771-8442 FAX ( )

Page 1 of 1

AICC N 3580

SPECIAL INSTRUCTIONS: ATTN: Krista

Reference: Gehm Corp. Geo. # 0111

SAMPLE IDENTIFICATION

ITEM	LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	ANALYSES REQUESTED: TCLP Metals	ANALYSES REQUESTED: Flash Point	COMMENTS
1	(1)	70% CCl4 Cop / 30% waste oil	8-11-93		Glass 32oz	X	X	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

ITEMS TRANSFERRED	RELINQUISHED BY	Date	Time	RECEIVED BY	Date	Time	REASON for TRANSFER
				[signature]	8/11/93	1500	

Reference 10

THE GEHM Corporation
1417 Bingham Road
Post Office Box 65
Boonville, MO 65233

816-882-3485
816-882-5766 (Fax)

October 26, 1993

Ms. Kris Davidson, Environmental Specialist
Missouri Department of Natural Resources
Hazardous Waste Program - Superfund Section
P.O. Box 176
Jefferson City, Missouri 65102

RE: UST Removal Closure Report

Dear Ms. Davidson,

We are submitting the enclosed report on behalf of Terminal Railroad Association (TRRA) of St. Louis. The report contains soil sample analysis results as requested by TRRA. I hope you find this information useful in your investigation of the area.

Should you have any questions regarding this report or require additional information, please call me at (816) 882-3485.

Sincerely,

Daryl R. Bowles, CHMM
Director,
Environmental Field Services

cc: Mr Bob Ripper
Terminal Railroad Association of St. Louis
700 North Second Street
St. Louis, Missouri 63102

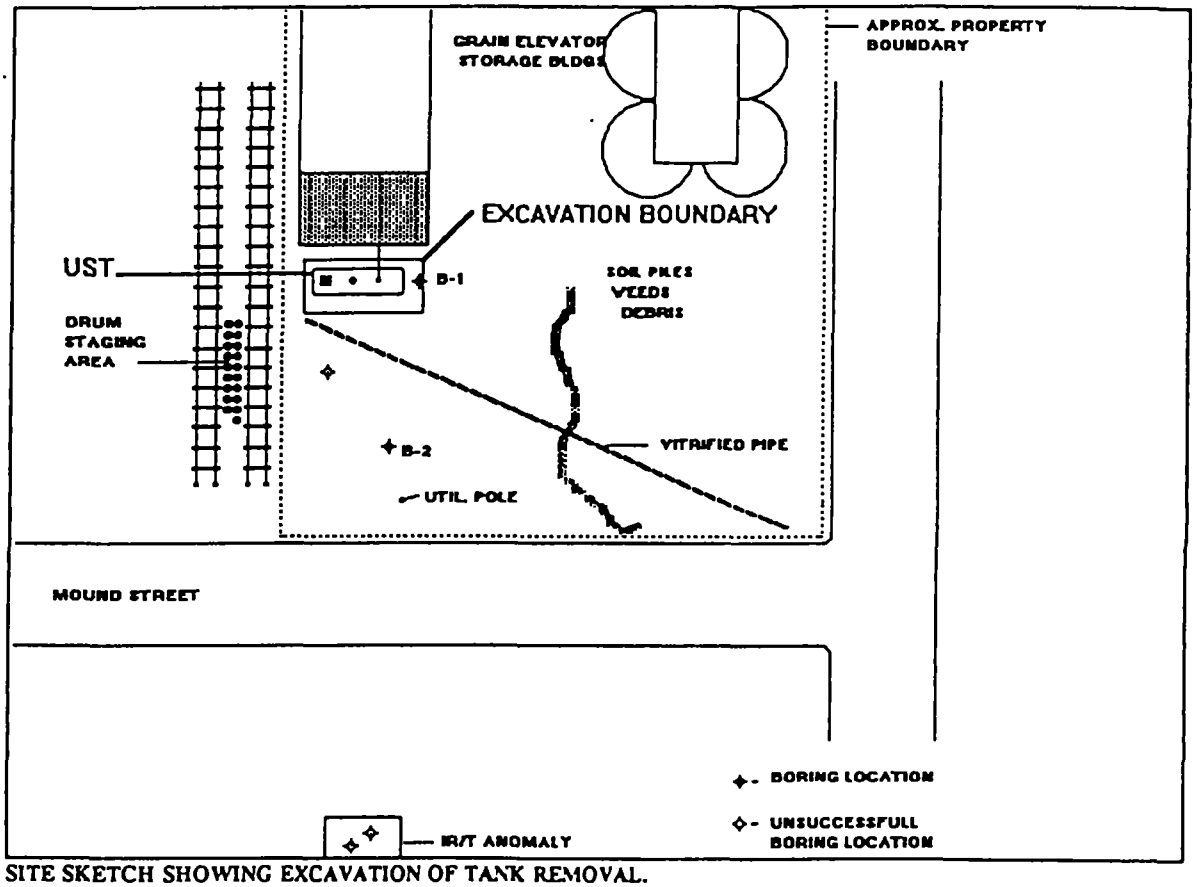
UST CLOSURE REPORT

for

Terminal Railroad Association

OWNER/FACILITY INFORMATION:

Facility Name:	NONE	UT# N/A	
Address	First & Mound Streets		
County St. Louis	City	St. Louis, MO	Zip Code 63102
Telephone/Contact	(314) 539-4712	Mr. Bob Ripper	
Date of Tank Removal	October 11, 1993		



SITE SKETCH SHOWING EXCAVATION OF TANK REMOVAL.

PROJECT SYNOPSIS

This underground storage tank removal project is a result of the discovery of oils seeping into a pump station operated by Metropolitan Sewer District (MSD) in St. Louis, Missouri. On July 14, 1993, MSD reported this situation to the MDNR. MSD analytical information revealed PCB levels of less than 50 ppm in the oils seeping into the pump station. Additionally, a sample was obtained from waste oil contained in an underground storage tank present in the area, and owned by Terminal Railroad Association of St. Louis (TRRA). The St. Louis Fire Department (SLFD) notified TRRA on July 28, 1993 and requested the contents of the tank be removed. TRRA was unaware of the existence of the tank prior to notification by the SLFD.

In response to the situation, TRRA initiated and completed the following tasks:

- **Contents of the tank were removed** on August 4, 1993. The tank was completely cleaned and freed of all liquids. The material was containerized on-site in 55 gallon drums for characterization and disposal.

- An **Infrared Thermographic Survey was conducted** of the area in an attempt to characterize leak plumes or trails.

- **Three borings** were advanced in the immediate area to determine subsurface soil conditions. Two soil samples were obtained from the site and submitted to a qualified laboratory for chemical analysis.

The results of these efforts are documented in an *ACTIVITIES REPORT* dated Setember 1, 1993 which documents the response efforts and findings of the investigatory activities.

This UST had no record of registration with the Missouri Department of Natural Resources. TRRA indicated no knowlege of the existence of the tank prior to notification by the SLFD. The UST removal project included removal of the soil overburden, removal of the tank, obtaining samples of the soils below the tank, on the down gradient wall and of the soil pile, disposal of the tank as scrap metal, and backfilling the excavation.

1.0 SAMPLE RESULTS

Soil sampling for this UST removal project included sampling below the tank and the down gradient wall. Additionally, one composite sample of excavated soil was obtained.

SAMPLE RESULTS SUMMARY TABLE (in ppm)

I.D	LOCATION	TPH	BENZENE	TOLUENE	E. BENZENE	XYLENES	PCB's
PIT	FROM BELOW TANK, 2 COMPOSITE POINTS AT EACH END, OF NATIVE SOIL, 12FT. DEPTH	<5	<0.002	<0.002	<0.002	<0.004	<.05
DGW	FROM DOWN GRADIENT WALL (EAST WALL), 10.5 FT. DEPTH	< 5	<0.002	<0.002	<0.002	<0.004	<.05
SP	FROM FOUR COMPOSITE POINTS OF THE EXCAVATED SOILS	66	<0.002	0.002	0.002	0.004	<.05

2.0 LOCATION OF LINES AND UTILITIES

Underground lines or utilities were not discovered in the immediate area during excavation activities. However, an area drawing supplied by TRRA denotes a vitrified pipe extending across the site. (See Sketch Section 5.0)

3.0 FORMER LOCATIONS OF TANK(S)

One 10,000 gallon tank was located at the south end of the eastern most building on the property. The tank overburden consisted of grass and soil. The product line extended north from the tank approximately 10 feet and entered the building through a concrete wall at ground elevation.

4.0 DEPTH & SIZE OF TANK

Tank capacity was 10,000 gallons. Dimensions were 10.5 ft. diameter by 18.5 ft long. The top of the tank was exposed at grade elevation.

5.0 EXCAVATION BOUNDARIES

The excavation was limited to that necessary for tank removal. This excavation extended approximately 4 feet beyond the outer limits of the tank to a depth of 12 feet. Final dimensions of the tank pit excavation was 16 ft wide, 25 feet long and 12 feet deep.

6.0 ABOVE GROUND TANKS & PIPING

There were no above ground tank systems at this site.

7.0 DISTANCE TO WELLS, STREAMS, AND LAKES.

There were no private drinking water wells, or lakes within .5 miles of the tank location. The site is adjacent to the Mississippi River approximately 1,000 feet to the east.

8.0 SOILS DESCRIPTION

Soils encountererd was black junk fill with cinders to a depth of 12 feet. Below, native soils consisted of typical river sands/silts.

9.0 PHOTOGRAPHS

PHOTO #1: NORTH EAST VIEW SHOWING TANK AT BEGINNING OF EXCAVATION.

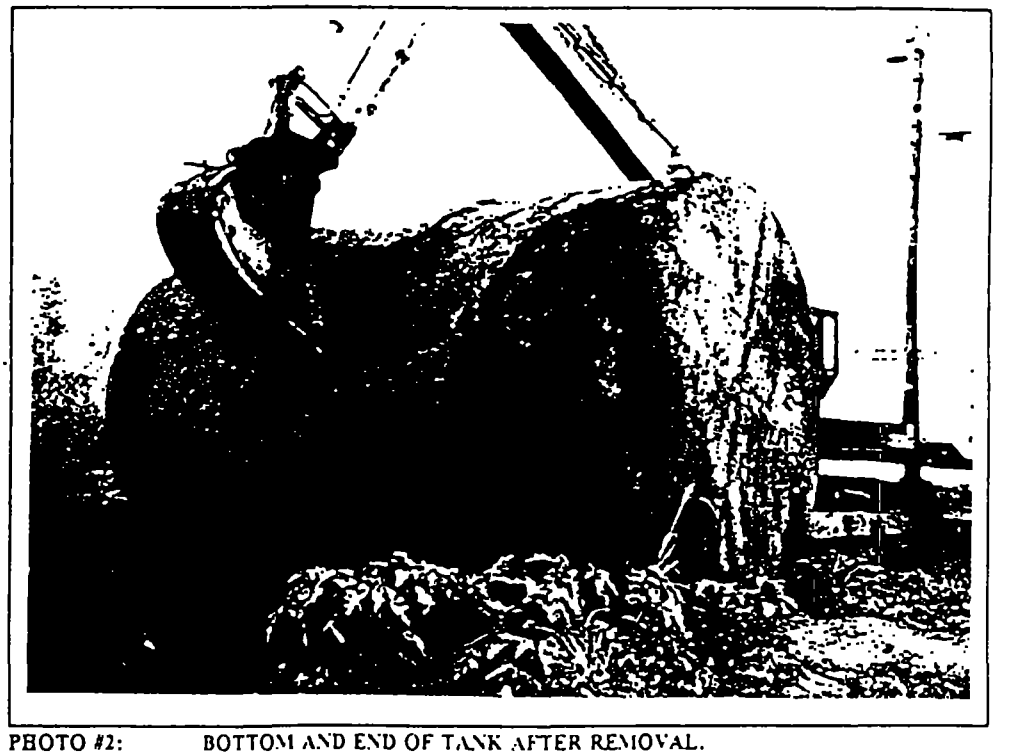


PHOTO #2: BOTTOM AND END OF TANK AFTER REMOVAL.

PHOTO #3: BOTTOM OF PIT AND EAST END OF EXCAVATION.

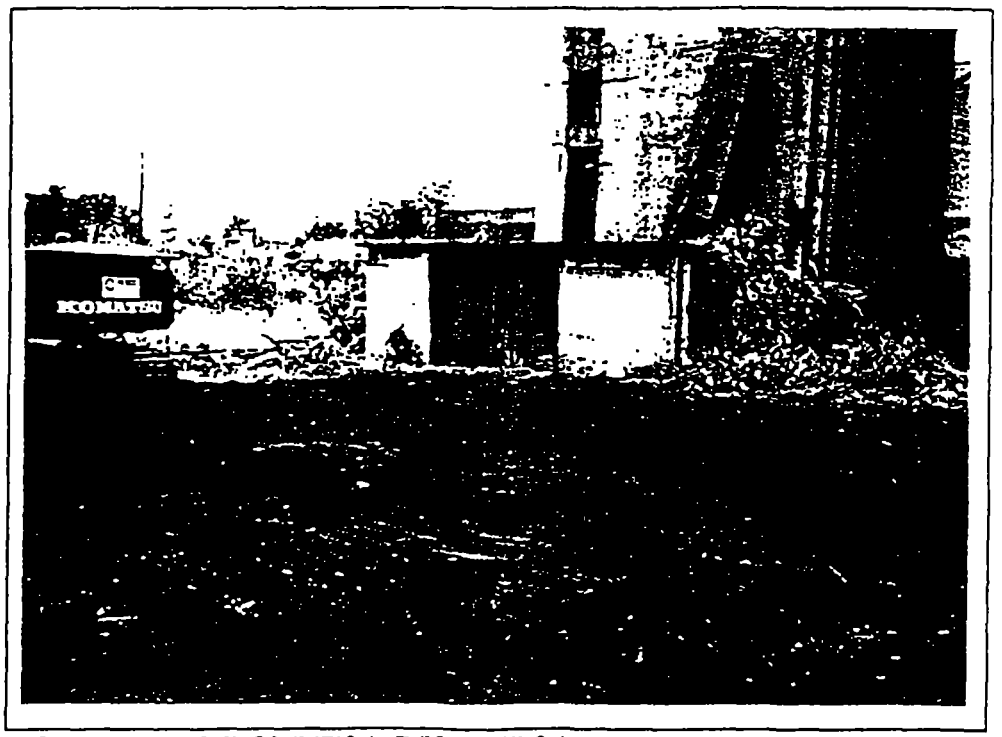


PHOTO #4: SITE CONDITION AT COMPLETION.

11.0 DESCRIPTION OF RESIDUAL CONTAMINATION

Based on odor and appearance, no contaminated media was observed during tank removal operations.

12.0 AMOUNT OF EXCAVATED SOILS

Approximately 30 cubic yards of soil was removed in efforts to remove the tank and affected soils.

13.0 SLUDGE IN TANKS

The tank had previously been emptied of all contents and cleaned. Fifteen drums of Waste Oil/ethylene glycol sludge/liquid was generated for disposal.

15.0 DISPOSAL OF TANK CONTENTS

Tank contents is currently awaiting acceptance for disposal by a licensed and permitted disposal company.

16.0 DISPOSAL OF TANK(S)

The tank was transported to, and disposed of through scrap metal recycling at Grossman Iron & Steel Company, St. Louis, MO.

17.0 FORMER CONTENTS OF TANK(S)

TRRA indicated the tank originally was used to store Fuel Oil.

18.0 DEPTH OF GROUNDWATER

After tank removal, a small amount of water was present in the tank pit area estimated at < 50 gallons. This water was absorbed into the loose soils in the pit during subsequent excavation activities. No other water accumulated or was encountered.

AMERICAN INTERPLEX CORPORATION
LABORATORIES

8600 Kanis Road
Little Rock, AR 72204-2322
(501) 224-5060

The Gehm Corporation (C-1270)
Post Office Box 65
Boonville, MO 65233

October 19, 1993

ATTN: Mr. Daryl Bowles

Control No. 4528

Sample Description: Three (3) soil received on 10/13/93
Re: Terminal Railroad Assn. 0119
P.O. No. 101-293 0119

Result:

Parameter	Unit	Pit 10-11-93 1020	DGW 10-11-93 1022	SP 10-11-93 1025
Total Recoverable Petroleum Hydrocarbons	mg/Kg	<5	<5	66
PCB	mg/Kg	<0.05	<0.05	<0.05
Benzene	mg/Kg	<0.002	<0.002	<0.002
Toluene	mg/Kg	<0.002	<0.002	<0.002
Ethylbenzene	mg/Kg	<0.002	<0.002	<0.002
m- & p-Xylenes	mg/Kg	<0.002	<0.002	<0.002
o-Xylene	mg/Kg	<0.002	<0.002	<0.002

Method: Modified EPA 418.1, EPA 3550, 8080, 5030A, 8020

Remark: Results are presented on an as-received basis.

Enclosure: Chain of Custody

AMERICAN INTERPLEX CORPORATION

By Steven Lovell
Steven Lovell
Technical Director

MWM/tj

HICL-93-28

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

THE GEHM Corporation

Submitted by: (Name/Telephone/Date)	Lab: (Name/Address/Telephone)	Client Name/Project Location: (Contact/Phone #)
THE GEHM CORPORATION 1417 BINGHAM RD, P.O. BOX 65 BOONVILLE, MO 65233 DARYL BOWLES 816-882-3485	AMERICAN INTERPLEX CORP. 8600 KANIS RD. LITTLE ROCK, AR 72204 501-224-5060	TERMINAL RAILROAD ASSN. FIRST & MOUND STREETS ST. LOUIS, MO Bob Rotter 314-539-4712

Project No.:	Applicable Regulatory No.:	P.O. #: (For Lab)	Samplers Signature:
0119	N/A	101-295 0119	Daryl R. Bowles

AIC #	Sample ID	Matrix	Preservative	Date	Time	ANALYSIS REQUEST: BTEX (8020)	TPH (418.1)	TPH MO.MOD (418.1)	OA-1 (DOW A)	OA-2 (DOW A)	TOC (418.1)	PCB CONT. (8080)	OTHER	OTHER	OTHER
1	PIT	SOIL	ICE	10-11-93	1020	X		X				X			
2	DGW	SOIL	ICE	10-11-93	1022	X		X				X			
3	SP	SOIL	ICE	10-11-93	1025	X		X				X			

COMMENTS/SPECIAL INSTRUCTIONS:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Daryl R. Bowles	10-12-93	1000			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			Shane Hudson	10/13/93	1030

Petroleum Fuel & Terminal
Foot of Mullanphy Street
St. Louis, Missouri 63102
(314) 621-0522

Reference 11

Charles Gay
Fire Inspector
Fire Prevention Bureau
1421 North Jefferson
St. Louis, Missouri 63106

Dear Mr. Gay

Per our conversation on September 8, 1993. We discovered the leak during our yearly hydro teasting of our pipe lines/hoses. When we experienced a loss of 25# lb of pressure.

We then started to isolate the most likly place and this would be in the expansion joint at the sea wall. After excavating the site we then found a small pen hole in a 6 inch pipe line. After making the necessary repairs we decided to take this pipe line out of service.

We recovered 2 1/2 bbls of oil/soil to be disposed of. If you feel the need to contact me on this mater please feel free to do so at (314) 621-0522.

Thank you

Randel H. Lewis
Terminal Manager

9/20/93

Post-it™ brand fax transmittal memo 7671 [# of pages ▸]

To Howard Ennoid	From Charles Gay
Co.	Co.
Dept.	Phone #
Fax #	Fax #

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
INSTRUMENTATION ANALYSIS

Reference 12

Lab. No. 270 Sample Source: Wet Well Date Received 7-9-93

Sample Date 7-8-93 Time: ☐ Grab ☐ Comp Collected by:

☒ IR ☐ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☐ TLC ☐

☐ **Priority Pollutant** mg/L (except as noted)

☐ **VOLATILES:**

acrolein	
acrylonitrile	
benzene	
bromodichloromethane	
bromoform	
bromomethane	
carbon tetrachloride	
chlorobenzene	
chloroethane	
2-chloroethyl vinyl ether	
chloroform	
chloromethane	
dibromochloromethane	
1,2-dichlorobenzene	
1,3-dichlorobenzene	
1,4-dichlorobenzene	
1,1-dichloroethane	
1,2-dichloroethane	
1,1-dichloroethene	
trans-1, 2-dichloroethene	
1,2-dichloropropane	
1, 3-dichloropropene, cis	
1, 3-dichloropropene, trans	
ethyl benzene	
methylene chloride	
1,1,2,2-tetrachloroethane	
tetrachloroethene	
toluene	
1,1,1-trichloroethane	
1,1,2-trichloroethane	
trichloroethene	
vinyl chloride	

☐ **ACIDS:**

4-chloro-3-methylphenol	
2-chlorophenol	
2,4-dichlorophenol	
2,4-dimethylphenol	
4, 6-dinitro-2-methylphenol	

ACIDS: (Cont'd)

2,4-dinitrophenol	
2-nitrophenol	
4-nitrophenol	
pentachlorophenol	
phenol	
2,4,6-trichlorophenol	

☐ **BASE/NEUTRALS**

acenaphthene	
acenaphthylene	
anthracene	
benzidine	
benzo(a)anthracene	
benzo(a)pyrene	
benzo (b) fluoranthene	
benzo (g,h,i) perylene	
benzo (k) fluoranthene	
bis (2-chloroethoxy) methane	
bis (2-chloroethyl) ether	
bis (2-chloroisopropyl) ether	
bis (2-ethylhexyl) phthalate	
4-bromophenyl phenyl ether	
butyl benzyl phthalate	
2-chloronaphthalene	
4-chlorophenyl phenyl ether	
chrysene	
dibenzo (a,h) anthracene	
3,3-dichlorobenzidine	
diethyl phthalate	
dimethyl phthalate	
di-n-butyl phthalate	
di-n-octyl phthalate	
2,4-dinitrotoluene	
2,6-dinitrotoluene	
1,2-diphenylhydrazine	
fluoranthene	
fluorene	
hexachlorobenzene	
hexachlorobutadiene	

BASE/NEUTRALS: (Cont'd)

hexachlorocyclopentadiene	
hexachloroethane	
indeno (1,2,3-cd) pyrene	
isophorone	
naphthalene	
nitrobenzene	
N-nitrosodimethylamine	
N-nitrosodi-n-propylamine	
N-nitrosodiphenylamine	
phenanthrene	
pyrene	
2,3,7,8-tetrachlorodibenzo-p-dioxin	
1,2,4-trichlorobenzene	

☐ **PESTICIDES:**

aldrin	
alpha-BHC	
beta-BHC	
gamma-BHC	
delta-BHC	
chlordane	
4,4'-DDD	
4,4-DDE	
4,4-DDT	
dieldrin	
alpha-endosulfan	
beta-endosulfan	
endousulfan sulfate	
endrin	
endrin aldehyde	
heptachlor epoxide	
heptachlor	
☒ PCB-1016	<5.0
☒ PCB-1221	
☒ PCB-1232	
☒ PCB-1242	
☒ PCB-1248	<5.0
☒ PCB-1254	47.0
☒ PCB-1260	<1.0
toxaphene	

☐ Gas Chromatography results:

☐ Thin-Layer Chromatography results:

☒ Appearance: Dark oil

☒ Infrared Spectroscopy (a) methods utilized: Smear test

(b) results: 2920 cm⁻¹ – Triplet – Strong
1460 cm⁻¹ – Singlet – Moderate
1380 cm⁻¹ – Singlet – Moderate

☒ Odor: Gasoline

☐ API Gravity:

☐ Solubilities:

☐ Ultraviolet/Visible Spectroscopy results:

☐ Distillation Range:

☐ Flash Point:

☐

☒ Special Tests: (specify) Dexsil "Clor-n-oil" PCB screening Kit 1/50 Dilution > 50ppm PC

Conclusions Infrared Spectra on Sample # 0434 and #270 are similar.

Date Transmitted: 7/19/93 by: Daniel F. Florida

64-130WW

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
INSTRUMENTATION ANALYSIS

Lab. No. 434 Sample Source: UST Brooklyn & Mound Date Received 7/15/93

Sample Date 7/14/93 Time: _____ ☒ Grab ☐ Comp Collected by: _____

☒ IR ☒ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☐ TLC ☐ _____

☐ Priority Pollutant mg/L (except as noted)

☐ **VOLATILES:**

acrolein	
acrylonitrile	
benzene	
bromodichloromethane	
bromoform	
bromomethane	
carbon tetrachloride	
chlorobenzene	
chloroethane	
2-chloroethyl vinyl ether	
chloroform	
chloromethane	
dibromochloromethane	
1,2-dichlorobenzene	
1,3-dichlorobenzene	
1,4-dichlorobenzene	
1,1-dichloroethane	
1,2-dichloroethane	
1,1-dichloroethene	
trans-1, 2-dichloroethene	
1,2-dichloropropane	
1, 3-dichloropropene, cis	
1, 3-dichloropropene, trans	
ethyl benzene	
methylene chloride	
1,1,2,2-tetrachloroethane	
tetrachloroethene	
toluene	
1,1,1-trichloroethane	
1,1,2-trichloroethane	
trichloroethene	
vinyl chloride	

☐ **ACIDS:**

4-chloro-3-methylphenol	
2-chlorophenol	
2,4-dichlorophenol	
2,4-dimethylphenol	
4, 6-dinitro-2-methylphenol	

ACIDS: (Cont'd)

2,4-dinitrophenol	
2-nitrophenol	
4-nitrophenol	
pentachlorophenol	
phenol	
2,4,6-trichlorophenol	

☐ **BASE/NEUTRALS**

acenaphthene	
acenaphthylene	
anthracene	
benzidine	
benzo(a)anthracene	
benzo(a)pyrene	
benzo (b) fluoranthene	
benzo (g,h,i) perylene	
benzo (k) fluoranthene	
bis (2-chloroethoxy) methane	
bis (2-chloroethyl) ether	
bis (2-chloroisopropyl) ether	
bis (2-ethylhexyl) phthalate	
4-bromophenyl phenyl ether	
butyl benzyl phthalate	
2-chloronaphthalene	
4-chlorophenyl phenyl ether	
chrysene	
dibenzo (a,h) anthracene	
3,3-dichlorobenzidine	
diethyl phthalate	
dimethyl phthalate	
di-n-butyl phthalate	
di-n-octyl phthalate	
2,4-dinitrotoluene	
2,6-dinitrotoluene	
1,2-diphenylhydrazine	
fluoranthene	
fluorene	
hexachlorobenzene	
hexachlorobutadiene	

BASE/NEUTRALS: (Cont'd)

hexachlorocyclopentadiene	
hexachloroethane	
indeno (1,2,3-cd) pyrene	
isophorone	
naphthalene	
nitrobenzene	
N-nitrosodimethylamine	
N-nitrosodi-n-propylamine	
N-nitrosodiphenylamine	
phenanthrene	
pyrene	
2,3,7,8-tetrachlorodibenzo-p-dioxin	
1,2,4-trichlorobenzene	

☐ **PESTICIDES:**

aldrin	
alpha-BHC	
beta-BHC	
gamma-BHC	
delta-BHC	
chlordane	
4,4'-DDD	
4,4-DDE	
4,4-DDT	
dieldrin	
alpha-endosulfan	
beta-endosulfan	
endousulfan sulfate	
endrin	
endrin aldehyde	
heptachlor epoxide	
heptachlor	
☒ PCB-1016	<1.0
☒ PCB-1221	<1.0
☒ PCB-1232	<1.0
☒ PCB-1242	<1.0
☒ PCB-1248	<1.0
☒ PCB-1254	39.0
☒ PCB-1260	<1.0
toxaphene	

☐ Gas Chromatography results: _____

☐ Thin-Layer Chromatography results: _____

☒ Appearance: Dark oil

☒ Infrared Spectroscopy (a) methods utilized: Smear test

(b) results: 2920 – Strong – Triplet
1460 – Moderate – Singlet
1380 – Moderate – Singlet

☒ Odor: Gasoline & Oil

☐ API Gravity: _____

☐ Solubilities: _____

☐ Ultraviolet/Visible Spectroscopy results: _____

☐ Distillation Range: _____

☐ Flash Point: _____

☐ _____

☐ Special Tests: (specify)

Conclusions Infrared spectra on Samples #434 and #270 are similar.

Date Transmitted: 7/19/93 by: Daniel F Jenida

Reference 13

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
SPECIAL SAMPLE FORM

Lab. No. 886 ☐ Comp ☒ Grab Date Received 8/9/93

Sample Date 8/9/93 Sample Time 0845 to

Requested by: HEDMOND Collected by: SAME

Sample Source: MH # MH12 F-6A1 Truck No.

Sampling Location: NEXT TO FLOOD WALL & MULCHAHY

Reason for sample: TO DETERMINE IF PCB's PRESENT

☐ Trunk ☐ Sanitary ☐ Stream ☐ Storm ☐ Seepage ☐ STP ☐ Hauler

☐ Industry ☐ Other (explain)

Analysis: except as noted ☐ mg/L ☐ ug/L ☐ mg/kg ☐ % comp ☐ other

☐ pH	(units)	☐ F		☐ Hg	
☐ SPC	(umhos/cm)	☐ Cl		☐ As	
☐ ALK		☐ CN		☐ Ba	
☐ ACI		☐ CNA		☐ Be	
☐ TS		☐ KJN		☐ Cd	
☐ SS		☐ NH_3		☐ Cr	
☐ VSS		☐ NO_3		☐ Cu	
☐ %V		☐ NO_2		☐ Fe	
☐ SET	(ml/L)	☐ PHT		☐ Pb	
☐ GRE		☐ PHO		☐ Ni	
☐ BOD		☐ SO_4		☐ Se	
☐ COD		☐ SO_3		☐ Ag	
☐ TOC		☐ S		☐ Zn	
☐ PHE		☐ SUR		☐ Tl	
☐		☐		☐ Sb	
☐		☐		☐	
☐		☐		☐	
☐ Color:		☐ Cr^{+6}		☐	

☐ Odor: ☐ Tot. Hardness

☐ Appearance: ☐ Tot. Chlorine

☐ Organics ☐ IR ☐ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☒ ID

☐ Biological: ☐ Bioassay: ☐ Total Coli: No./100ml

☐ Fecal Coli: No./100ml

☐ Microscopic: ☐ FecalStrep: No./100ml

Remarks: CHECK FOR PCB'S

Date Transmitted: 8/17/93 by: MARIO J. DRPRIM

75 - DEC/LAB

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
INSTRUMENTATION ANALYSIS

Lab. No. 886 Sample Source: Manhole F-CA1 (#12) Date Received 8/9/93

Sample Date 8/9/93 Time: 0845 ☒ Grab ☐ Comp Collected by: _____

☒ IR ☒ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☐ TLC ☐ _____

☐ **Priority Pollutant** mg/L (except as noted)

☐ **VOLATILES:**

	acrolein	
	acrylonitrile	
X	benzene	21.0
	bromodichloromethane	
	bromoform	
	bromomethane	
	carbon tetrachloride	
	chlorobenzene	
	chloroethane	
	2-chloroethyl vinyl ether	
	chloroform	
	chloromethane	
	dibromochloromethane	
	1,2-dichlorobenzene	
	1,3-dichlorobenzene	
	1,4-dichlorobenzene	
	1,1-dichloroethane	
	1,2-dichloroethane	
	1,1-dichloroethene	
	trans-1, 2-dichloroethene	
	1,2-dichloropropane	
	1, 3-dichloropropene, cis	
	1, 3-dichloropropene, trans	
X	ethyl benzene	32.0
	methylene chloride	
	1,1,2,2-tetrachloroethane	
	tetrachloroethene	
X	toluene	21.0
	1,1,1-trichloroethane	
	1,1,2-trichloroethane	
	trichloroethene	
	vinyl chloride	

☐ **ACIDS:**

	4-chloro-3-methylphenol	
	2-chlorophenol	
	2,4-dichlorophenol	
	2,4-dimethylphenol	
	4, 6-dinitro-2-methylphenol	

ACIDS: (Cont'd)

	2,4-dinitrophenol	
	2-nitrophenol	
	4-nitrophenol	
	pentachlorophenol	
	phenol	
	2,4,6-trichlorophenol	

☐ **BASE/NEUTRALS**

	acenaphthene	
	acenaphthylene	
	anthracene	
	benzidine	
	benzo(a)anthracene	
	benzo(a)pyrene	
	benzo (b) fluoranthene	
	benzo (g,h,i) perylene	
	benzo (k) fluoranthene	
	bis (2-chloroethoxy) methane	
	bis (2-chloroethyl) ether	
	bis (2-chloroisopropyl) ether	
	bis (2-ethylhexyl) phthalate	
	4-bromophenyl phenyl ether	
	butyl benzyl phthalate	
	2-chloronaphthalene	
	4-chlorophenyl phenyl ether	
	chrysene	
	dibenzo (a,h) anthracene	
	3,3-dichlorobenzidine	
	diethyl phthalate	
	dimethyl phthalate	
	di-n-butyl phthalate	
	di-n-octyl phthalate	
	2,4-dinitrotoluene	
	2,6-dinitrotoluene	
	1,2-diphenylhydrazine	
	fluoranthene	
	fluorene	
	hexachlorobenzene	
	hexachlorobutadiene	

BASE/NEUTRALS: (Cont'd)

	hexachlorocyclopentadiene	
	hexachloroethane	
	indeno (1,2,3-cd) pyrene	
	isophorone	
	naphthalene	
	nitrobenzene	
	N-nitrosodimethylamine	
	N-nitrosodi-n-propylamine	
	N-nitrosodiphenylamine	
	phenanthrene	
	pyrene	
	2,3,7,8-tetrachlorodibenzo-p-dioxin	
	1,2,4-trichlorobenzene	

☐ **PESTICIDES:**

	aldrin	
	alpha-BHC	
	beta-BHC	
	gamma-BHC	
	delta-BHC	
	chlordane	
	4,4'-DDD	
	4,4-DDE	
	4,4-DDT	
	dieldrin	
	alpha-endosulfan	
	beta-endosulfan	
	endosulfan sulfate	
	endrin	
	endrin aldehyde	
	heptachlor epoxide	
	heptachlor	
X	PCB-1016	<1.0
X	PCB-1221	↓
X	PCB-1232	
X	PCB-1242	
X	PCB-1248	<1.0
X	PCB-1254	25.4
X	PCB-1260	<1.0
	toxaphene	

☐ Gas Chromatography results: Run Method 203 on Volatiles

GC/FID resemble Diesel Fuel

☐ Thin-Layer Chromatography results: _____

☐ Appearance: _____

☒ Infrared Spectroscopy (a) methods utilized: Smear test

(b) results: 2920 cm⁻¹ - Triplet - Strong
1460 cm⁻¹ - Singlet - Medium
1380 cm⁻¹ - Singlet - Moderate
1590 cm⁻¹ - Singlet - Moderate

☐ Odor: _____

☐ API Gravity: _____

☐ Solubilities: _____

☐ Ultraviolet/Visible Spectroscopy results: _____

☐ Distillation Range: _____

☐ Flash Point: _____

☐ _____

☐ Special Tests: (specify)

Conclusions Both Infrared spectra and GC/FID resemble Diesel Fuels

Date Transmitted: 8/13/93 by: Daniel Flanida

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
SPECIAL SAMPLE FORM

Lab. No. 887 ☐ Comp ☒ Grab Date Received 8/9/93

Sample Date 8/9/93 Sample Time: 0835 to

Requested by: HEDMOND Collected by: SAME

Truck No.

Sample Source: MH # MH013 F-641

Sampling Location: NEXT TO FLOOD WALL AT MULLANPHY

Reason for sample: TO DETERMINE IF PCB'S PRESENT

☐ Trunk ☐ Sanitary ☐ Stream ☐ Storm ☐ Seepage ☐ STP ☐ Hauler

☐ Industry ☐ Other (explain)

Analysis: except as noted ☐ mg/L ☐ ug/L ☐ mg/kg ☐ % comp ☐ other

☐	pH	(units)	☐	F		☐	Hg	
☐	SPC	(umhos/cm)	☐	Cl		☐	As	
☐	ALK		☐	CN		☐	Ba	
☐	ACI		☐	CNA		☐	Be	
☐	TS		☐	KJN		☐	Cd	
☐	SS		☐	NH_3		☐	Cr	
☐	VSS		☐	NO_3		☐	Cu	
☐	%V		☐	NO_2		☐	Fe	
☐	SET	(ml/L)	☐	PHT		☐	Pb	
☐	GRE		☐	PHO		☐	Ni	
☐	BOD		☐	SO_4		☐	Se	
☐	COD		☐	SO_3		☐	Ag	
☐	TOC		☐	S		☐	Zn	
☐	PHE		☐	SUR		☐	Tl	
☐			☐			☐	Sb	
☐			☐			☐		
☐			☐			☐		
☐	Color:		☐	Cr^{+6}		☐		

☐ Odor: ☐ Tot. Hardness

☐ Appearance: ☐ Tot. Chlorine

☐ Organics ☐ IR ☐ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☒ ID

☐ Biological: ☐ Bioassay: ☐ Total Coli: No./100ml

☐ Fecal Coli: No./100ml

☐ Microscopic: ☐ FecalStrep: No./100ml

Remarks: CHECK FOR PCB'S

Date Transmitted: 8/17/93 by: MARIO J. DEPINTO

75 - DEC/LAB

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
INSTRUMENTATION ANALYSIS

Lab. No. 887 Sample Source: Manhole F-6A1 (#13) Date Received 8/9/93

Sample Date 8/9/93 Time: 0835 ☒ Grab ☐ Comp Collected by: _____

☒ IR ☒ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☐ TLC ☐ _____

☐ **Priority Pollutant** mg/L (except as noted)

☐ **VOLATILES:**

	acrolein	
	acrylonitrile	
X	benzene	<1.0
	bromodichloromethane	
	bromoform	
	bromomethane	
	carbon tetrachloride	
	chlorobenzene	
	chloroethane	
	2-chloroethyl vinyl ether	
	chloroform	
	chloromethane	
	dibromochloromethane	
	1,2-dichlorobenzene	
	1,3-dichlorobenzene	
	1,4-dichlorobenzene	
	1,1-dichloroethane	
	1,2-dichloroethane	
	1,1-dichloroethene	
	trans-1, 2-dichloroethene	
	1,2-dichloropropane	
	1, 3-dichloropropene, cis	
	1, 3-dichloropropene, trans	
X	ethyl benzene	21.0
	methylene chloride	
	1,1,2,2-tetrachloroethane	
	tetrachloroethene	
X	toluene	<1.0
	1,1,1-trichloroethane	
	1,1,2-trichloroethane	
	trichloroethene	
	vinyl chloride	

☐ **ACIDS:**

	4-chloro-3-methylphenol	
	2-chlorophenol	
	2,4-dichlorophenol	
	2,4-dimethylphenol	
	4, 6-dinitro-2-methylphenol	

ACIDS: (Cont'd)

	2,4-dinitrophenol	
	2-nitrophenol	
	4-nitrophenol	
	pentachlorophenol	
	phenol	
	2,4,6-trichlorophenol	

☐ **BASE/NEUTRALS**

	acenaphthene	
	acenaphthylene	
	anthracene	
	benzidine	
	benzo(a)anthracene	
	benzo(a)pyrene	
	benzo (b) fluoranthene	
	benzo (g,h,i) perylene	
	benzo (k) fluoranthene	
	bis (2-chloroethoxy) methane	
	bis (2-chloroethyl) ether	
	bis (2-chloroisopropyl) ether	
	bis (2-ethylhexyl) phthalate	
	4-bromophenyl phenyl ether	
	butyl benzyl phthalate	
	2-chloronaphthalene	
	4-chlorophenyl phenyl ether	
	chrysene	
	dibenzo (a,h) anthracene	
	3,3-dichlorobenzidine	
	diethyl phthalate	
	dimethyl phthalate	
	di-n-butyl phthalate	
	di-n-octyl phthalate	
	2,4-dinitrotoluene	
	2,6-dinitrotoluene	
	1,2-diphenylhydrazine	
	fluoranthene	
	fluorene	
	hexachlorobenzene	
	hexachlorobutadiene	

BASE/NEUTRALS: (Cont'd)

	hexachlorocyclopentadiene	
	hexachloroethane	
	indeno (1,2,3-cd) pyrene	
	isophorone	
	naphthalene	
	nitrobenzene	
	N-nitrosodimethylamine	
	N-nitrosodi-n-propylamine	
	N-nitrosodiphenylamine	
	phenanthrene	
	pyrene	
	2,3,7,8-tetrachlorodibenzo-p-dioxin	
	1,2,4-trichlorobenzene	

☐ **PESTICIDES:**

	aldrin	
	alpha-BHC	
	beta-BHC	
	gamma-BHC	
	delta-BHC	
	chlordane	
	4,4'-DDD	
	4,4-DDE	
	4,4-DDT	
	dieldrin	
	alpha-endosulfan	
	beta-endosulfan	
	endosulfan sulfate	
	endrin	
	endrin aldehyde	
	heptachlor epoxide	
	heptachlor	
X	PCB-1016	<1.0
X	PCB-1221	
X	PCB-1232	
X	PCB-1242	
X	PCB-1248	<1.0
X	PCB-1254	11.7
X	PCB-1260	<1.0
	toxaphene	

☐ Gas Chromatography results: Run Method 203 on Volatiles

GC/FID resembles Diesel Fuel

☐ Thin-Layer Chromatography results: _____

☐ Appearance: _____

☒ Infrared Spectroscopy (a) methods utilized: Smear test

(b) results: 2920 cm⁻¹ - Strong - Triplet
1460 cm⁻¹ - Moderate - Singlet
1380 cm⁻¹ - Moderate - Singlet
1590 cm⁻¹ - Moderate - Singlet

☐ Odor: _____

☐ API Gravity: _____

☐ Solubilities: _____

☐ Ultraviolet/Visible Spectroscopy results: _____

☐ Distillation Range: _____

☐ Flash Point: _____

☐ _____

☐ Special Tests: (specify)

Conclusions Infrared spectra and GC/FID resemble Diesel Fuel

Date Transmitted: 8/13/93 by: Daniel Florida

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
SPECIAL SAMPLE FORM

Lab No: 888 ☐ Comp ☒ Grab Date Received 8/9/93

Sample Date 8/9/93 Sample Time: 0825 to

Requested by: HEDMOND Collected by: SAME

Sample Source: MH F MH 14 F-6A1 Truck No.

Sampling Location: NEXT TO FLUID WALL AT MULLANPHY

Reason for sample: TO DETERMINE IF PCB'S PRESENT

☐ Trunk ☐ Sanitary ☐ Stream ☐ Storm ☐ Seepage ☐ STP ☐ Hauler

☐ Industry ☐ Other (explain)

Analysis: except as noted ☐ mg/L ☐ ug/L ☐ mg/kg ☐ % comp ☐ other

☐ pH	(units)	☐ F		☐ Hg	
☐ SPC	(umhos/cm)	☐ Cl		☐ As	
☐ ALK		☐ CN		☐ Ba	
☐ ACI		☐ CNA		☐ Be	
☐ TS		☐ KJN		☐ Cd	
☐ SS		☐ NH_3		☐ Cr	
☐ VSS		☐ NO_3		☐ Cu	
☐ %V		☐ NO_2		☐ Fe	
☐ SET	(ml/L)	☐ PHT		☐ Pb	
☐ GRE		☐ PHO		☐ Ni	
☐ BOD		☐ SO_4		☐ Se	
☐ COD		☐ SO_3		☐ Ag	
☐ TOC		☐ S		☐ Zn	
☐ PHE		☐ SUR		☐ Tl	
☐		☐		☐ Sb	
☐		☐		☐	
☐		☐		☐	
☐ Color:		☐ Cr^{+6}		☐	

☐ Odor: ☐ Tot. Hardness

☐ Appearance: ☐ Tot. Chlorine

☐ Organics ☐ IR ☐ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☒ ID

☐ Biological: ☐ Bioassay:

☐ Microscopic:

☐ Total Coli: No./100ml

☐ Fecal Coli: No./100ml

☐ FecalStrep: No./100ml

Remarks: CHECK FOR PCB'S

Date Transmitted: 8/17/93 by: MARIO J. DEPRIMO

75 - DEC/LAB

MSD ENVIRONMENTAL COMPLIANCE LABORATORY
INSTRUMENTATION ANALYSIS

Lab. No. 888 Sample Source: Manhole F-6A1 (#14) Date Received 8/9/93

Sample Date 8/9/93 Time: 0825 ☒ Grab ☐ Comp Collected by:

☒ IR ☒ GC ☐ LEL ☐ RAD ☐ UV ☐ FLUOR ☐ TLC ☐

☐ **Priority Pollutant** mg/L (except as noted)

☐ **VOLATILES:**

	acrolein	
	acrylonitrile	
X	benzene	21.3
	bromodichloromethane	
	bromoform	
	bromomethane	
	carbon tetrachloride	
	chlorobenzene	
	chloroethane	
	2-chloroethyl vinyl ether	
	chloroform	
	chloromethane	
	dibromochloromethane	
	1,2-dichlorobenzene	
	1,3-dichlorobenzene	
	1,4-dichlorobenzene	
	1,1-dichloroethane	
	1,2-dichloroethane	
	1,1-dichloroethene	
	trans-1, 2-dichloroethene	
	1,2-dichloropropane	
	1, 3-dichloropropene, cis	
	1, 3-dichloropropene, trans	
X	ethyl benzene	[illegible]
	methylene chloride	
	1,1,2,2-tetrachloroethane	
	tetrachloroethene	
X	toluene	21.
	1,1,1-trichloroethane	
	1,1,2-trichloroethane	
	trichloroethene	
	vinyl chloride	

☐ **ACIDS:**

	4-chloro-3-methylphenol	
	2-chlorophenol	
	2,4-dichlorophenol	
	2,4-dimethylphenol	
	4, 6-dinitro-2-methylphenol	

ACIDS: (Cont'd)

	2,4-dinitrophenol	
	2-nitrophenol	
	4-nitrophenol	
	pentachlorophenol	
	phenol	
	2,4,6-trichlorophenol	

☐ **BASE/NEUTRALS**

	acenaphthene	
	acenaphthylene	
	anthracene	
	benzidine	
	benzo(a)anthracene	
	benzo(a)pyrene	
	benzo (b) fluoranthene	
	benzo (g,h,i) perylene	
	benzo (k) fluoranthene	
	bis (2-chloroethoxy) methane	
	bis (2-chloroethyl) ether	
	bis (2-chloroisopropyl) ether	
	bis (2-ethylhexyl) phthalate	
	4-bromophenyl phenyl ether	
	butyl benzyl phthalate	
	2-chloronaphthalene	
	4-chlorophenyl phenyl ether	
	chrysene	
	dibenzo (a,h) anthracene	
	3,3-dichlorobenzidine	
	diethyl phthalate	
	dimethyl phthalate	
	di-n-butyl phthalate	
	di-n-octyl phthalate	
	2,4-dinitrotoluene	
	2,6-dinitrotoluene	
	1,2-diphenylhydrazine	
	fluoranthene	
	fluorene	
	hexachlorobenzene	
	hexachlorobutadiene	

BASE/NEUTRALS: (Cont'd)

	hexachlorocyclopentadiene	
	hexachloroethane	
	indeno (1,2,3-cd) pyrene	
	isophorone	
	naphthalene	
	nitrobenzene	
	N-nitrosodimethylamine	
	N-nitrosodi-n-propylamine	
	N-nitrosodiphenylamine	
	phenanthrene	
	pyrene	
	2,3,7,8-tetrachlorodibenzo-p-dioxin	
	1,2,4-trichlorobenzene	

☐ **PESTICIDES:**

	aldrin	
	alpha-BHC	
	beta-BHC	
	gamma-BHC	
	delta-BHC	
	chlordane	
	4,4'-DDD	
	4,4-DDE	
	4,4-DDT	
	dieldrin	
	alpha-endosulfan	
	beta-endosulfan	
	endousulfan sulfate	
	endrin	
	endrin aldehyde	
	heptachlor epoxide	
	heptachlor	
X	PCB-1016	<1.0
X	PCB-1221	↓
X	PCB-1232	↓
X	PCB-1242	↓
X	PCB-1248	<1.0
X	PCB-1254	36.6
X	PCB-1260	<1.0
	toxaphene	

☐ Gas Chromatography results: Run Method 203 on Volatiles

GC/FID resembles Diesel Fuel

☐ Thin-Layer Chromatography results:

☐ Appearance:

☒ Infrared Spectroscopy (a) methods utilized: Smear test

(b) results: 2920 cm-1 - Strong - Triplet
1460 cm-1 - Moderate - Singlet
1350 cm-1 - Moderate - Singlet
1000 cm-1 - Moderate - Singlet

☐ Odor:

☐ API Gravity:

☐ Solubilities:

☐ Ultraviolet/Visible Spectroscopy results:

☐ Distillation Range:

☐ Flash Point:

☐

☐ Special Tests: (specify)

Conclusions Infrared spectra and GC/FID resemble Diesel Fuel.

Date Transmitted: 8/13/93 by: Daniel Flanda

PRELIMINARY ASSESSMENT

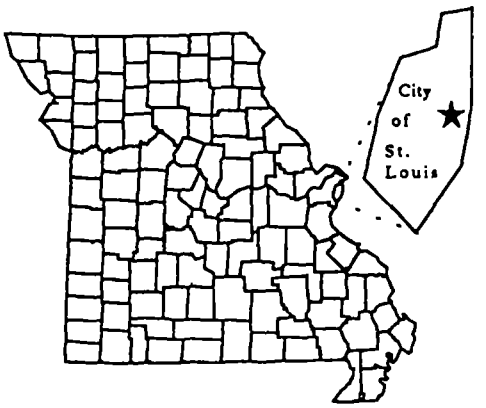
MOUND STREET PCB'S

CITY OF ST. LOUIS, MISSOURI

March 21, 1994

Missouri Department of Natural Resources

Hazardous Waste Program



Prepared By

Don Falls

Don Falls
Environmental
Specialist

Reviewed By

James L. Kavanaugh
Chief, Site
Evaluation Unit

Approved By

Edwin Knight
Chief
Superfund Section

Reference 16

Rules of
Department of Natural Resources
Division 20—Clean Water Commission
Chapter 7—Water Quality

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
Hazardous Waste Program

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCB Site

Date: December 29, 1993

TELEPHONE

Incoming (X)
Outgoing ( )

CONFERENCE

Field ( )
Office (X)

SUBJECT: Mound Street PCB Site, Drinking Water Intakes

PERSONS INVOLVED

Name	Representing
Eddie Starbuck	MDNR, Geology and Land Survey
Don Falls	MDNR, Hazardous Waste Program
Sally McConkey	Illinois Water Survey
Richard Reed	Illinois American Water Company

SUMMARY OF CONVERSATION:

Eddie Starbuck phoned to let me know that she had reviewed her notes from her previous work on the St. Louis Ship site and discovered a note that indicates that there is a drinking water intake located downstream of the Mound Street PCB site (approximately one mile) on the Illinois side of the Mississippi River. Her notes give the location of this intake as the SE 1/4 of the SW 1/4 of Section 11, T2N, R10W.

Eddie said she obtained this information from the Illinois Water Survey approximately two years ago and that their phone numbers are (217) 333-7223 and 333-5482.

ACTION TAKEN

I phoned the Illinois Water Survey and spoke with Ms. Sally McConkey. Ms. McConkey referred me to the Illinois American Water Company at (618) 874-1873. I then phoned Illinois American Water Company and spoke with a Mr. Richard Reed, Assistant Production Supervisor. Mr. Reed informed me that the Illinois American Water Company utilizes two water intake locations, one at Chouteau Island, which is about 10 miles upstream from the Mound Street site, and the intake in Section 11 in East St. Louis, Illinois. Mr. Reed said that their water company serves 19 medium to small communities with a combined service population of approximately 300,000. He also said that the East St. Louis intake has a

production capacity of 30 million gallons a day and is blended with water from the Chouteau Island intake. The East St. Louis intake provides approximately 60% of the total according to Mr. Reed.

FINAL RESULTS:

This information will be incorporated into the Mound Street PCB Preliminary Assessment.

Don Falls

Don Falls
Environmental Specialist

DF:so

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
Hazardous Waste Program

Reference 18

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCBs

Date: March 15, 1994

TELEPHONE (314) 882-9880

Incoming ( )
Outgoing (X)

CONFERENCE

Field ( )
Office (X)

SUBJECT: Fish Consumption From the Mississippi River at St. Louis

PERSONS INVOLVED

Name	Representing
Jack Robinson	Missouri Department of Conservation
Don Falls	MDNR, Hazardous Waste Program

SUMMARY OF CONVERSATION:

I contacted the Missouri Department of Conservation (MDOC) office in Columbia to see if their department has any records concerning annual fish consumption from the Mississippi River at St. Louis. I was referred to Mr. Jack Robinson, a fisheries biologist with the MDOC who is responsible for records of commercial fish harvest on the Missouri, Meramec, and Mississippi Rivers.

Mr. Robinson explained that MDOC did not have information on actual consumption of fish, but only on the numbers caught by commercial fishermen. This information also does not include the numbers of fish taken and eaten by sports fishers.

Mr. Robinson said that he would send me the information on annual harvest from the Mississippi River later in the week. Mr. Robinson suggested that the Missouri Department of Health might have figures on the actual amount of fish consumed because of their previous studies on Chlordane and fish.

FINAL RESULTS:

This information will be included in the Mound Street PCBs Preliminary Assessment.

Don Falls

Don Falls
Environmental Specialist
Hazardous Waste Program

CHECK OF DATA

P.2

RIVER= TOTAL COUNTY=TOTAL

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
ASIATIC CARP	.	.	6063	728	69	8	1510	181	.	.	7642	917
GRASSCARP	.	.	10762	2260	947	199	5770	1212	20	4	17499	3675
PADDLEFISH	.	.	2612	784	1361	408	1144	343	50	15	5167	1550
EEL	.	.	.	.	.	.	104	19	227	41	331	60
GAR	.	.	4083	408	60	6	3171	317	913	91	8227	823
Q S CARP	.	.	26708	5075	165	28	60165	11431	.	.	87016	16533
SUCKER	.	.	4059	365	550	49	11577	1042	.	.	16186	1457
STURGEON	.	.	4468	1117	1353	338	11150	2788	30	8	17001	4250
BONFIN	.	.	820	57	.	.	10	1	.	.	830	58
BLUE CAT	.	.	10598	5829	6416	3528	12617	6939	10848	5966	40478	22263
CHANNEL CAT	.	.	7188	3953	578	208	90990	50044	20036	11020	118592	65226
BULLHEAD	.	.	31	7	52	12	502	120	400	96	985	236
FLATHEAD	.	.	4466	2412	1522	822	69536	37549	2905	1569	78429	42352
DRUM	.	.	8919	1338	1412	212	37823	5673	2188	328	50342	7551
CARP	.	.	66367	7964	2727	327	75196	9018	512	61	144752	17370
BUFFALO	.	.	87332	20960	12841	3082	95506	22873	3069	737	198548	47652
TOTAL	.	.	244476	53257	29832	9228	476519	149551	41198	19936	792025	231972
DAYS			2938		450		105907		5930			

Total reported harvest from the Missouri, Mississippi, & St Francis Rivers in 1992

1992

CHECK OF DATA

Total harvest reported from the Mississippi River

RIVER= MISSISSIPPI COUNTY=TOTAL

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
ASIATIC CARP	.	.	2372	285	69	8	930	112	.	.	3371	405
BIGHEAD CARP	.	.	6413	1347	437	92	2813	591	.	.	9663	2029
PADDLEFISH	.	.	2512	754	1361	408	902	271	50	15	4825	1447
EEL	.	.	.	.	.	.	98	18	227	41	325	58
GAR	.	.	2590	259	10	1	1440	144	904	90	4944	494
BIG S CARP	.	.	14788	2810	145	28	49226	9353	.	.	64159	12190
SUCKER	.	.	2109	190	510	46	10671	960	.	.	13290	1196
STURGEON	.	.	3024	756	1593	338	7643	1911	30	8	12050	3013
BOWFIN	.	.	820	57	.	.	10	1	.	.	830	58
BLUE CAT	.	.	4465	2456	6040	3322	6832	3758	8875	4881	26212	14417
CHANNEL CAT	.	.	5078	2793	378	208	72575	39916	10406	10123	96437	53040
BULLHEAD	.	.	30	7	52	12	670	65	400	96	752	180
FLATHEAD	.	.	2616	1413	1522	822	47919	25876	2325	1255	54382	29366
DRUM	.	.	5191	779	1330	199	29340	4401	2110	316	37971	5696
CARP	.	.	30209	3625	832	100	36154	4338	450	54	67645	8117
BUFFALO	.	.	37791	9070	11256	2701	66274	15906	3007	722	118328	28399
TOTAL	.	.	120008	26599	25295	8286	333097	107619	36784	17602	515184	160107
DAYS			1571		407		58430		4961			

RIVER= MISSISSIPPI COUNTY=BOONE 5

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
BLUE CAT	.	.	.	.	.	.	.	.	414	228	414	228
CHANNEL CAT	.	.	.	.	.	.	201	111	492	271	693	381
BULLHEAD	.	.	.	.	.	.	109	26	.	.	109	26
FLATHEAD	.	.	.	.	.	.	77	52	51	17	128	69
DRUM	.	.	.	.	.	.	217	23	10	1	227	34
CARP	.	.	.	.	.	.	100	12	.	.	100	12
BUFFALO	.	.	.	.	.	.	561	135	.	.	561	135
TOTAL	.	.	.	.	.	.	1265	368	967	517	2232	885
DAYS							526		108			

RIVER= MISSISSIPPI COUNTY=BOONE 11

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
BIGHEAD CARP	.	.	70	15	.	.	350	73	.	.	420	88
PADDLEFISH	.	.	300	90	300	90	15	4	.	.	615	184
BIG S CARP	.	.	150	28	20	4	.	.	.	.	170	32
STURGEON	.	.	100	25	.	.	.	.	.	.	100	25
BOWFIN	.	.	20	1	.	.	.	.	.	.	20	1
BLUE CAT	.	.	40	22	.	.	225	124	.	.	265	146
CHANNEL CAT	.	.	160	88	.	.	560	308	.	.	720	396
FLATHEAD	.	.	300	162	.	.	256	138	.	.	556	300
DRUM	.	.	.	.	.	.	568	85	.	.	568	85

CHECK OF DATA

CHANNEL CAT	375	206			587	323	2221	1222	3183	1751
FLATHEAD	106	57			764	413	70	38	940	508
DRUM	84	13			185	28	243	36	512	77
CARP	705	85			99	12	20	2	824	99
BUFFALO	1259	302			2036	489			3295	791
TOTAL	3169	898			3711	1276	2634	1335	9514	3509
DAYS	24				417		707			

RIVER= MISSISSIPPI COUNTY=ST GENEVIEVE 95

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
GAR									100	10	100	10
Q S CARP			12	2			70	13			82	16
CHANNEL CAT									25	14	25	14
BULLHEAD									126	30	126	30
FLATHEAD									50	27	50	27
DRUM							25	4			25	4
CARP									50	6	50	6
BUFFALO			30	7			15	4	280	67	325	78
TOTAL			42	9			110	21	630	154	782	184
DAYS			5				5		115			

RIVER= MISSISSIPPI COUNTY=ST LOUIS 97

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
PADDLEFISH			175	52							175	52
GAR			33	3					1	0	34	3
Q S CARP			255	48							255	48
STURGEON			60	15							60	15
BLUE CAT			541	298			25	14	235	129	801	441
CHANNEL CAT			154	85			493	271	2056	1131	2703	1487
FLATHEAD			10	5			145	78	539	291	694	375
DRUM			67	10			15	2	88	13	170	25
CARP			705	85							705	85
BUFFALO			1150	276			121	29	900	216	2171	521
TOTAL			3150	878			799	394	3819	1780	7768	3052
DAYS			17				293		274			

RIVER= MISSISSIPPI COUNTY=SCOTT 101

SPECIE	SEINE POUNDS	SEINE DOLLARS	TRAMMEL NET POUNDS	TRAMMEL NET DOLLARS	GILL NET POUNDS	GILL NET DOLLARS	HOOP NET POUNDS	HOOP NET DOLLARS	TROT LINE POUNDS	TROT LINE DOLLARS	TOTAL POUNDS	TOTAL DOLLARS
GRASSCARP			35	7							35	7
EEL									10	2	10	2
GAR									50	5	50	5
BLUE CAT			50	27					2379	1309	2429	1336
CHANNEL CAT							22	12	2079	1143	2101	1156
BULLHEAD									20	5	20	5
FLATHEAD							36	19	50	27	86	46

1992
Reported commercial harvest of licensed fishermen from the Mississippi River — St. Louis county
dollar value is live-weight wholesale value.

SPECIAL PROBLEM INVESTIGATION
DEPARTMENT OF ENVIRONMENTAL COMPLIANCE

Reference 19

CONTROL NUMBER: 93 (YR) 07 (MO) 08 (DAY)

CROSS REFERENCE:

NEW FILE: BROOKLYN STREET PUMP STATION

TO: HOWARD EDMOND FROM: SI SMITH
DATE ASSIGNED: 07-08-93 TIME: 0800
SUBJECT: OIL IN BROOKLYN STREET PUMP STATION
SPECIAL INSTRUCTIONS: LOCATE SOURCE OF OIL ENTERING BROOKLYN STREET PUMP STATION AND TAKE CORRECTIVE ACTION

STREET ADDRESS: FOOT OF BROOKLYN STREET ZIP CODE: 63102
NEAREST INTERSECTION: MULLANPHY MAP COORDINATES: 28-D-19

TYPE OF PROBLEM: OIL ENTERING PUMP STATION
TRUNK SEWER: BCH TRTMT PLANT: BISSELL WATER COURSE: N/A

VOLUME: UNKNOWN QUANTITY: UNKNOWN
CAUSE: SOURCE: POSSIBLE LEAKING TANK

PERSON REPORTING: TELEPHONE:
CONTACT PERSON: JAMES GARAVAGLIA TELEPHONE: 622-3588

DATE OF INCIDENT: ON GOING RESPONSIBLE PARTY: CITY OF ST. LOUIS
REGULATORY AGENCY CONTACTED: MSD, MODNR, FIRE DEPT, & CITY OF ST. LOUIS
CLEAN UP BY: REACT ENVIRONMENTAL ENGINEERS

COMPLETION DATE: 08-19-93 DAMAGES BILLED ($):

INVESTIGATIVE ACTION SUMMARY: 07-08-93 Call from MSD pump station stating oil was entering Brooklyn pump station. I obtained a sample for analysis. Started looking for possible source. Located an under ground storage tank, which has large hole in the top, on the south side of a vacant building located just west of the pump station and south of Brooklyn Street. A sample of the oil still in this tank was collected. The analysis of the oil from the pump sta contained 47 mg/l of 1254 pcb's and the oil from the tank contained 39 mg/l of 1254 pcb's. I contacted Charlie Gay of the Fire Marshall's office and met him at the site on 07-16-93 to show him the problem and to obtain help in finding owner of property. Charlie contacted Chief Horn, informed him of the situation, Chief Horn contacted James Garavaglia of the comptroller's office. We met at site. It was determined at this time that the City of St. Louis is the owner of the east half of the property between 1st St. and the flood wall and Wheeler Ferry Company owns the west half. Cont. Page two

CONCLUSION: It appears at this time an underground storage tank is the cause of this problem. Also the possibility exist of ground saturation of oil from an old Union Electric building.

Copy sent to: Date:

SPECIAL PROBLEM INVESTIGATION continued:

93 Yr 07 Mo 08 Day

BROOKLYN PUMP STATION

DETAILS OF INVESTIGATION: The City is to locate owners of the property and take action on getting area cleaned up. They contacted React Environmental Engineers.

07-16-93 Met with city engineers and React to determine what is to be done. At the present time React is placing booms in the wet well of the pump station to soak up the oil entering. It was not determined at this time what to do with the underground tank. React wanted to trench along the sewer entering the pump station but due to the high water table and the possibility of causing a major problem with the flood waters no trench at this time.

07-26-93 Returned to the pump station to follow up on the clean up. React did not place booms in station they only put absorbent pads. The pump station maintenance crew removed the pads to prevent them from being pulled into the pumps since they were not tied down. I contacted the city comptroller and informed him of this problem. React contacted me and I told them that they had to use booms inside the station and tied to prevent any possibility of being pulled into the pumps or move outside station into the first manhole up stream to collect the oil.

07-27-93 Met Chief Horn at the pump station. React has installed boom and they are tied. Checked the underground tank and nothing has been done to the tank. It still has oil standing in the bottom. It appears that there could be at least 6 to 8 inches of oil in the tank. There is still a small oil sheen on the water entering the station. Chief Horn is to find out what is to be done with the tank and let me know.

07-28-93 Met Chief Horn and Clifford Trice, chief engineer for Terminal Railroad Association at the site of the underground tank. It has been determined that the property belongs to Terminal Railroad. They are to take steps to remove the tank.

07-29-93 Received call from Daryl Bowles, Gehm Corp, rep for Terminal Railroad requesting copies of analysis on pump station and tank. They are to preform an infrared test on area to try and determine just where the oil is entering the sewer. Test is to be done first week of August. Copies of analysis sent.

08-03-93 Made follow up on progress of clean up. The area around the tank has been cleaned up and graded but the opening to the tank has been covered. No way at this time to tell if tank has been pumped. The booms at the pump station do not appear to have been serviced since they were last installed.

SPECIAL PROBELM INVESTIGATION continued

93 Yr 07 Mo 08 Day

BROOKLYN PUMP STATION

08-04-08 Met with Terminal Railroad, consulting company and fire department underground tank is being pumped out today. Tank will be removed as soon as the water level goes down. The infrared pictures that were taken do not indicate the source of oil in pump station is from tank. They did indicated a possible location of another underground tank on the city property just south of Mound Street. Fire department was notified.

08-08-93 1015 Hrs Received call from Chief Horne requesting my presents at 1st & Mullanphy. Three manholes were located along the flood wall which contained a large amount of oil. Could not determine at this time where oil is coming from. The manholes are holding water. I will return 08-09-93 to collect samples to find out if pcb's are present. There is some question as to the manholes belonging to MSD or the City.

08-09-93 Collected oil samples from all three manholes. Waiting on analysis.

08-10-93 Met Charlie Gay of fire department. He wanted to know where the manholes were located that contain this last source of oil. Also wanted to look at clean up that was preformed on the underground tank. The tank has been pumped and washed out. The oil has been remove.

08-17-93 The analysis of the samples taken from the manholes indicated they also contained a small amount of pcb 1254. These manhole belong to the city and Fire Marshall Horne was notified of this fact and also the results of the analysis on the manholes. The pads at the pump station have not been changed as of 08-17-93. Chief Horne was also informed of this situation.

08-19-93 The pads at the pump station were changed yesterday 08-18-93. The City of St. Louis is now taking care of having this problem cleaned up.

Reference 20

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: December 29, 1993

TO: Don Falls, Environmental Specialist, HWP, DEQ

FROM: Edith Starbuck, Geologist, Environmental Geology Section, DGLS

SUBJECT: PA/SI Geology Report for the Mound Street Site, St. Louis City

Enclosed is my report on the geologic and hydrologic considerations for the Mound Street Site. The report addresses specific conponents of the HRS. Please let me know if you have any questions or comments or need additional information.

3.0.1 General Considerations

The Mound Street site is located on the riverfront in the City of St. Louis. It is east of Second Street between Mound and Brooklyn Streets.

3.0.1.1 Groundwater target distance limit

The site is located on a narrow strip of alluvium between an area of limestone bedrock and the Mississippi River. (Ref. 1) The groundwater within the alluvium will move generally in the direction of the river, that is, to the east or southeast, and it will eventually discharge to the river. During unusually high river stages, the groundwater may temporarily flow away from the river. Since no confining layer is known to exist between the alluvial aquifer and the bedrock of Mississippian limestone (Ref. 4, p. I-136), the groundwater target distance should extend for a four mile radius from the site.

3.0.1.2 Aquifer boundaries

The shallowest material at the site is fill material. Its thickness is unknown, but is estimated at 15 to 18 feet.

The alluvium consists of a mixture of stratified sediments deposited by the river. Based on findings at a nearby site, the alluvium is made up of clay, and silty clay in the top 10 to 30 feet, but becomes generally coarser with depth, becoming silty sand and sand. Lenses of gravel can be found. (Ref. 2, p. 3-19 to 3-33) The total thickness of the alluvium is estimated at approximately 80 feet. The alluvial aquifer can be expected to yeild large quantities of fresh water. (Ref. 15, p. 21) The depth to water will be approximately 20 feet. The bedrock is Mississippian aged limestone.

The Mississippian System in this area is made up of a sequence of limestone, cherty limestone, and sandy or shaley limestones. This system includes, in decending order; the Ste. Genevieve Limestone, St. Louis Limestone, Salem Formation, Warsaw Formation, Burlington-Keokuk Limestone, and the Fern Glen Formation. (Ref. 13) The Salem and Warsaw formations are generally shaley limestones and do contain shale beds in the St. Louis area. (Ref. 14, p. 101-110) However, the thickness and position of shale horizons varies within this area (Ref. 14, figs 88, 89, 91, 92) The shallowest reliable aquitard in the area is the Maquoketa Shale at the top of the Ordovician System. The Mississippian aquifer might yield small quantities of fresh water in the target area, (Ref. 15, Ref. 16) but very little data is available. Any groundwater below the Maquoketa is expected to be mineralized. (Ref. 15, Ref. 16)

3.0.1.2.1 Aquifer interconnections

Drilling at a nearby site encountered no confining material between the alluvium and bedrock. (Ref. 4, p. I-136) The bedrock and alluvium can be considered one aquifer for HRS purposes.

3.0.1.2.2 Aquifer discontinuities

The alluvial aquifer is bounded by the limits of its deposition within the target area. Bedrock faulting in the area does not completely transect the Mississippian aquifer. No aquifer discontinuity exists within the target area.

3.1 Likelihood of release

3.1.2 Potential to release

3.1.2.2 Net precipitation

The assigned net precipitation factor value for the site is 3. (Ref. 3, figure 3-2)

3.1.2.3 Depth to aquifer

The depth to groundwater at the site is approximately 20 feet. The alluvial sediments at this depth may not be good aquifer material, however, the depth at which the alluvial material is saturated should be considered the aquifer. The depth to aquifer factor value is 5. (Ref. 3, table 3-5)

3.1.2.4 Travel time

The hydraulic conductivity for the shallow part of the alluvium consisting of silty clay and clay has been calculated at 9.9×10^{-6}. (Ref. 4, p. 6-26) It's thickness ranges from 10 to 30 feet. The travel time factor value is 15. (Ref. 3, table 3-7)

3.3.1 Nearest well

There is not believed to be any groundwater use within the target area. (Ref. 4, p. I-136; Ref. 5; Ref. 6). The nearest well factor value is 0. (Ref. 3, table 3-11)

3.3.4 Wellhead protection area

There is no wellhead protection area within the target area.

4.1.1.1 Definition of hazardous substance migration path for overland/flood migration component

The site is located on top of the flood wall constructed to protect the area from flooding. No channels or ditches were observed crossing the site. (Ref. 7) Much of the site is relatively flat. The eastern edge of the area slopes to the east, toward the river. The site is less than 300 feet from the river.

4.1.1.2 Target distance limit

The target distance limit should include the Mississippi River from the area downgradient from the site to a point fifteen miles downstream. This should be at approximately Mississippi River mile marker 166.

4.1.2.1.2.1 Potential to release by overland flow

4.1.2.1.2.1.2 Runoff

The drainage area for the site is less than 50 acres. (Ref. 8) the drainage area value is 1. (Ref. 3, table 4-3) The soil at the site appeared to be somewhat coarse textured. (Ref. 7) A moderate infiltration rate would be expected. The soil group designation is B. (Ref. 3, table 4-4) The two-year, 24-hour rainfall for the area is approximately 3.5 inches. (Ref. 9)

The rainfall/runoff value is 4. (Ref. 3, table 4-5) The runoff factor value is 1. (Ref. 3, table 4-6)

4.1.2.1.2.1.3 Distance to surface water

Since no ditches or channels were noted, the distance to surface water is estimated as a straight line between the site and the river. This distance is about 300 feet. (Ref. 8) The distance to surface water factor value is 20. (Ref. 3, table 4-7)

4.1.2.1.2.2 Potential to release by flood

4.1.2.1.2.2.2 Flood frequency

The site is located on top of a flood wall constructed to withstand a 500-year flood. It is elevated above the floodplain and therefore, the flood frequency factor value is 0. (Ref. 3, table 4-9)

4.1.2.3.1 Nearest intake

On the Missouri side of the Mississippi River, the nearest intakes are approximately 10 miles upstream from the site and 126 miles downstream. (Ref. 11) Information from the Illinois Water Survey indicates that there is a public water supply intake within the target area on the Illinois side. This intake is in the SE 1/4 of the SW 1/4 of section 11, T.2 N., R.10 W. in St. Clair County, Illinois. (Ref. 10) This would be less than one mile downstream from the site.

The Mississippi River is a very large river with an average flow greater than 100,000 cfs. (Ref. 12, p. 180) The assigned dilution weight is 0.00001. (Ref. 3, table 4-13) Because of this small dilution weight, the intake factor value is 0. (Ref. 3, p. 51613)

REFERENCES

1. Geologic Map of St. Louis City and County, Missouri, K.G. Brill, DGLS, 1991.

2. Remedial Investigation Report for the St. Louis Site, prepared for U.S. Department of Energy under the Formerly Utilized Site Remedial Action Program by Bechtel National, June 1991.

3. Federal Register, vol. 55, No. 241.

4. Radiological, Chemical, and Hydrogeological Characterization Report for the St. Louis Downtown Site in St. Louis, Missouri, prepared for the U.S. Department of Energy under the Formerly Utilized Site Remedial Action Program by Bechtel National, September, 1990.

5. Census of Missouri Public Water Systems, 1991, DEQ.

6. Well records for the area on file at DGLS.

7. Field observations, 10/6/93.

8. Granite City 7.5 minute topographic quadrangle, U.S. Geological Survey, 1954, photorevised 1982.

9. Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce.

10. Telephone messages from Dorothy Waller, Illinois Water Survey, June 11, and 12, 1992.

11. Census of Missouri Public Water systems, 1991, DEQ.

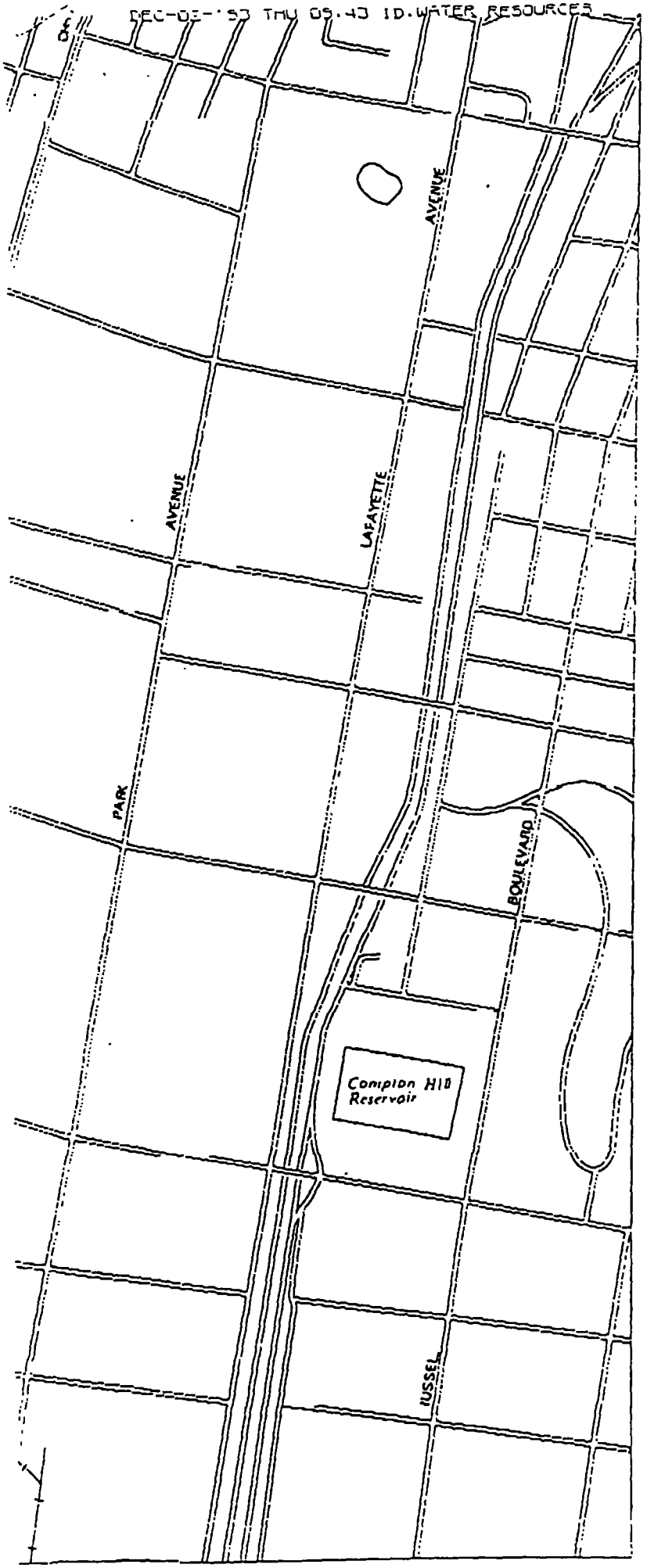
12. Water Resources Data, Missouri, Water Year 1989, U.S. Geological Survey Water-Data Report MO-89-1.

13. Geologic Map of St. Louis City and County, Missouri, K.G. Brill, DGLS, 1991.

14. Paleozoic Succession in Missouri-Part 4, Mississippian System, Report of Investigation No. 70, Part 4; Thomas L. Thompson; DGLS, 1986.

15. Water Resources, St. Louis Area, Missouri, Water Resources Report No. 30; Don E. Miller, et. al.; DGLS/USGS; 1974.

16. Groundwater Areas Map in Groundwater Maps of Missouri; Missouri Geological Survey and Water Resources; 1963.



shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established

To determine if flood insurance is available in this community, [illegible] Program, at (800) 638-6620, or (800) 424-8872.

APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

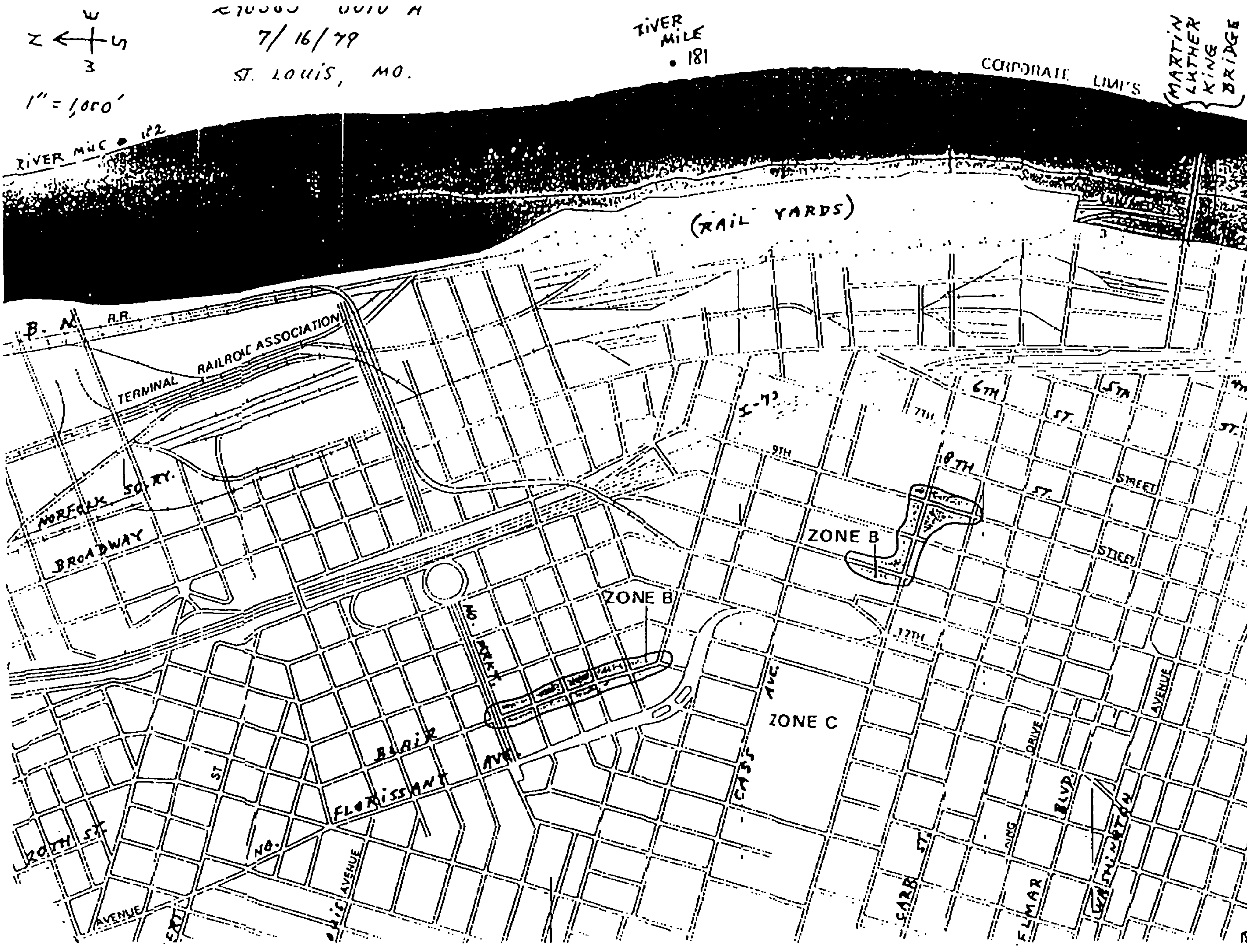
CITY OF
ST. LOUIS, MISSOURI
INDEPENDENT CITY

PANEL 10 OF 40
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
290385 0010 A

EFFECTIVE DATE:
JULY 10, 1979

U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION


7/16/79
ST. LOUIS, MO.
1" = 1,000'
RIVER MILE • 181
RIVER MILE • 182
CORPORATE LIMITS
MARTIN LUTHER KING BRIDGE
(RAIL YARDS)
B. N. R.R.
TERMINAL RAILROIC ASSOCIATION
NORFOLK SO. RY.
BROADWAY
I-70
6TH
5TH
7TH
ST.
9TH
8TH ST.
STREET
STREET
ZONE B
ZONE B
12TH
ZONE C
NO. MKT.
BLAIR AVE.
FLORISSANT AVE.
NO.
CASS AVE.
AVENUE
DRIVE
BLVD.
20TH ST.
AVENUE
AVENUE

STATE OF MISSOURI
OFFICE INFORMATION MEMO

DATE: 6/11/92 TIME: ☐ AM ☒ PM 3:30

TO: Edie

DEPARTMENT OR DIVISION:

FROM: Dorothy Walley

DEPARTMENT OR COMPANY: ILL Wtr Survey

PHONE NO: 217-333-7223

RECEIVED BY: KB

☒ Called/was here to see you	☐ Wants to see you	☐ Will call again
☐ Wants you to call	☐ URGENT	☐ Returned your call
☐ Prepare for my signature	☐ For your information	☐ Review
☐ Take necessary action	☐ For your signature	☐ As requested

REMARKS MESSAGES

Pub. Wtr. Supply Intakes on Miss. River

(2) in East St L. - Illinois American Wtr Co.

T4N - R10W - S.25 (SW corner)

T2N. R10W - S.11 (SE corner of SW 1/4)

(1) in Alton

T5N - R1W - S.4 (SE corner)

none in Illinois Co (217) 333-5482

MO 999-9007 (5-86)

Surface Wtr. Sect. Sally & Broeren

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: January 5, 1994

TO: Don Falls, Environmental Specialist, HWP, DEQ

FROM: Edith Starbuck, Geologist, DGLS

SUBJECT: Existence of karst near the Mound Street Site

Sinkholes and caves can be found in the Mississippian bedrock within the target area. The sinkholes are represented as closed depressions on the Granite City topographic map. Also, the existence of karst features is discussed in the DGLS publication, "Engineering Geology of St. Louis County, Missouri". The karst aquifer probably does not directly underlie the site, however, and it is not likely to be affected by contaminant migration from the site. If the site is actually on the bedrock residual area, any water that percolates down into it should move toward the alluvial aquifer since groundwater movement is toward the river.

Please let me know if you have any further questions about the site geology (314)368-2136.

ES:kb

MOUND STREET SITE STRATIGRAPHY

	Stratigraphic Unit	Composition	Thickness (ft.)	Remarks
Quaternary System	Alluvium	Clay, silt, sand, gravel	80	High yield aquifer
Mississippian System	Ste. Genevieve Formation	Silty to sandy limestone	470 - 530	Yields small to moderate quantities of water
	St. Louis Limestone			
	Salem Formation			
	Burlington-Keokuk Limestone	Cherty limestone	240	
	Fern Glen Formation	Red limestone and shale	100	
	Chouteau Group	Limestone, shale and siltstone	0 - 122	
Devonion System	Sulphur Springs Group	Sandstone and limestone	0 - 60	
	Grassy Creek Shale	Carbonaceous Shale	0 - 50	
Silurian System		Cherty limestone	0 - 200	
Ordovician System	Maquoketa Shale	Silty, limey, or dolomitic shale	150	Confining layer

- - - - - - - - - - - - - - - H e a d e r D a t a - - - - - - - - - - - - - - -

Log # 019835
Owner:NORTHWESTERN COOPERAGE CO
St:MO Cnty:ST. LOUIS
SE SE NE TRS: S02 T45N R07E
Alias:
Lat.:38,40,23.648N
Type well:Private Well
Long.:90,11,25.660W
Type log: S
Quad:38090C6
Driller:HAVERSTICK WELL CO Date: /
Driller License No:
Confidential:N Release Dt. /
Logger:C.E. ROBERTSON Date:08/1961

Elev.: 420 Elev.S Yield: 260 SWL:(a) H20 @:
T.D.: 80 base: DrDwn: 31 SWL:(b)

Bedrock at: 75 Samples saved:N Int. cored: 0 to 0
Top Fm.:HOLOCENE ALLUVIUM
Bot Fm.:MISSISSIPPIAN SYSTEM
Problems:
Remarks:

- - - - - - - - - - - - - C o n s t r u c t i o n D a t a - - - - - - - - - - -

Log #:019835 Date Completed: /

CASING: Dpth: 59 Diam: 8.00 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00
0 0.00
0 0.00
0 0.00

GROUT:	Type	Rig	Methd	Dt Abnd	Plug Date	Top	Bottom
				/	/	0	0

PUMP:	Cap	Type	Set at	TDH	Scrn Typ	Size	Lgth	Slot
	0		0	0		0	0	0

Well Treat	Type Dev	Typ Compl	Perf. Interval	Tube Pres.	Oil	Gas
			Top: 0 Bot: 0			

Open Top:HOLOCENE ALLUVIUM
Formations Bot:MISSISSIPPIAN SYSTEM
Other data sources:
Remarks:

- - - - - - - - - - - - - S t r a t i g r a p h y D a t a - - - - - - - - - - -

Log #:019835

Top	Base	Name	--Lith-- Pr	Sc	Mn	Minerals--- Pri	Oc	Sec	Oc	Mnr	Oc
0	75	HOLOCENE ALLUVIUM	CL	SD	GR		0		0		0
75	80	MISSISSIPPIAN SYSTEM	LS	SD			0		0		0

Printed on 12/30/93 at 10:45:40.

Header Data

Log #: 001655
Owner: BELCHER HOTEL
Alias type: Facility ID
Alias: 010000
Type well: Noncommunity Public Well
Type log: D
Driller:
Date: /
Driller License No:
Logger:
Date: /

St: MO Cnty: ST. LOUIS
NE SW SW TRS: S13 T45N R07E
Lat.:
Long.:
Quad: UNKNOWN

Confidential: N Release Dt. /

Elev.: 420 Elev.S Yield: 150 SWL: (a) H20 @:
T.D.: 2200 base: DrDwn: 000 SWL: (b)

Bedrock at: 0 Samples saved: N Int. cored: 0 to 0
Top Fm.:
Bot Fm.:
Problems:
Remarks:

Construction Data

Log #: 001655 Date Completed: 09/1951

CASING: Dpth: 80 Diam: 160.0 I/O: O Sz. Hole: 0.00 Sz. Below: 0.00
0 0.00
0 0.00
0 0.00

GROUT:	Type	Rig	Methd	Dt Abnd	Plug Date	Top	Bottom
				/	/	0	0

PUMP:	Cap	Type	Set at	TDH	Scrn Typ	Size	Lgth	Slot
	0		0	0		0	0	0

Well Treat	Type Dev	Typ Compl	Perf. Interval	Tube	Pres.	Oil	Gas
			Top: 0 Bot: 0				

Open Top:
Formations Bot:
Other data sources:
Remarks:

Stratigraphy Data

Log #: 001655

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Oc	Sec	Oc	Mnr	Oc
0	230	ST LOUIS LIMESTONE	LS	SH			0		0		0
230	350	SALEM FORMATION	LS	CH			0		0		0
350	380	UNKNOWN	SH				0		0		0
380	460	WARSAW FORMATION	LS	SH			0		0		0
460	630	KEOKUK-BURLINGTON LS. UNDIFF	LS	SH			0		0		0
630	720	FERN GLEN FORMATION	LS	SH	CH		0		0		0
720	760	KINDERHOOK SHALE	SH				0		0		0
760	880	SILURIAN SYSTEM	LS				0		0		0
880	1040	MAQUOKETA SHALE	SH	LS			0		0		0
1040	1180	KIMMSWICK LIMESTONE	LS				0		0		0
1180	1240	DECORAH GROUP	LS	CH			0		0		0
1240	1370	PLATTIN LIMESTONE	LS				0		0		0
1370	1502	JOACHIM DOLOMITE	SH	LS			0		0		0
1502	1640	ST. PETER-EVERTON FMS. UNDIFF	SS				0		0		0
1640	2200	CAMBRIAN SYSTEM	SS	LS			0		0		0

Printed on 12/30/93 at 10:49:09.

- - - - - - - - - - - - - - - H e a d e r D a t a - - - - - - - - - - - - - - -

Log # 003616 Owner:CUPPLES COMPANY St:MO Cnty:ST. LOUIS
SE NE NW TRS: S02 T45N R07E
Alias: Lat.:
Type well:Private Well Long.:
Type log: S Quad:UNKNOWN
Driller:WISE Date:05/1936
Driller License No: Confidential:N Release Dt. /
Logger:GROHSKOPF Date: /

Elev.: 421 Elev.S Yield: 15 SWL:(a) H20 @:
T.D.: 885 base: DrDwn: 0 SWL:(b)

Bedrock at: 0 Samples saved:N Int. cored: 0 to 0
Top Fm.:ST LOUIS LIMESTONE
Bot Fm.:SILURIAN SYSTEM
Problems:
Remarks:

- - - - - - - - - - - - - S t r a t i g r a p h y D a t a - - - - - - - - - - -

Log #:003616

Top	Base	Name	--Lith-- Pr Sc Mn	Pri	Oc	Sec	Oc	Mnr	Oc
0	210	ST LOUIS LIMESTONE	LS SH		0		0		0
210	325	SALEM FORMATION	LS CH SH		0		0		0
325	435	WARSAW FORMATION	SH LS CH		0		0		0
435	595	KEOKUK-BURLINGTON LS. UNDIFF	CH LS		0		0		0
595	700	FERN GLEN FORMATION	CH LS SH		0		0		0
700	735	CHOUTEAU GROUP	LS CH		0		0		0
735	755	CHATTANOOGA SHALE	SH		0		0		0
755	885	SILURIAN SYSTEM	LS SD DL		0		0		0

Printed on 12/30/93 at 10:47:17.

- - - - - - - - - - - - - - - H e a d e r D a t a - - - - - - - - - - - - - - -

.Log # Owner:FISHER CHEMICAL CO St:MO Cnty:ST. LOUIS
002748 NW SE SE TRS: S02 T45N R07E
Alias: Lat.:
Type well:Private Well Long.:
Type log: S Quad:UNKNOWN
Driller:WISE Date:08/1933
Driller License No: Confidential:N Release Dt. /
Logger:GLEASON Date: /

Elev.: 430 Elev.S Yield: 30 SWL:(a) H20 @:
T.D.: 210 base: DrDwn: 150 SWL:(b)

Bedrock at: 45 Samples saved:N Int. cored: 0 to 0
Top Fm.:ST LOUIS LIMESTONE
Bot Fm.:ST LOUIS LIMESTONE
Problems:
Remarks:

- - - - - - - - - - - - - C o n s t r u c t i o n D a t a - - - - - - - - - - -

Log #:002748 Date Completed:08/1933

CASING: Dpth: 30 Diam: 8.00 I/O:O Sz. Hole: 0.00 Sz. Below: 8.00
0 0.00
0 0.00
0 0.00

GROUT:	Type	Rig	Methd	Dt Abnd	Plug Date	Top	Bottom
				/	/	0	0

PUMP:	Cap	Type	Set at	TDH	Scrn Typ	Size	Lgth	Slot
	0		0	0		0	0	0

Well Treat	Type Dev	Typ Compl	Perf. Interval	Tube Pres.	Oil	Gas
			Top: 0 Bot: 0			

Open Top:ST LOUIS LIMESTONE
Formations Bot:ST LOUIS LIMESTONE
Other data sources:
Remarks:

- - - - - - - - - - - - - S t r a t i g r a p h y D a t a - - - - - - - - - - -

Log #:002748

Top	Base	Name	--Lith-- Pr	Sc	Mn	Pri	Oc	Sec	Oc	Mnr	Oc
45	210	ST LOUIS LIMESTONE	LS	CH			0		0		0

Printed on 12/30/93 at 10:46:32.

Reference 21

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

DATE: January 5, 1994

TO: Don Falls, Environmental Specialist, HWP, DEQ

FROM: Edith Starbuck, Geologist, DGLS

SUBJECT: Existence of karst near the Mound Street Site

Sinkholes and caves can be found in the Mississippian bedrock within the target area. The sinkholes are represented as closed depressions on the Granite City topographic map. Also, the existence of karst features is discussed in the DGLS publication, "Engineering Geology of St. Louis County, Missouri". The karst aquifer probably does not directly underlie the site, however, and it is not likely to be affected by contaminant migration from the site. If the site is actually on the bedrock residual area, any water that percolates down into it should move toward the alluvial aquifer since groundwater movement is toward the river.

Please let me know if you have any further questions about the site geology (314)368-2136.

ES:kb

Reference 22

SOKKIA

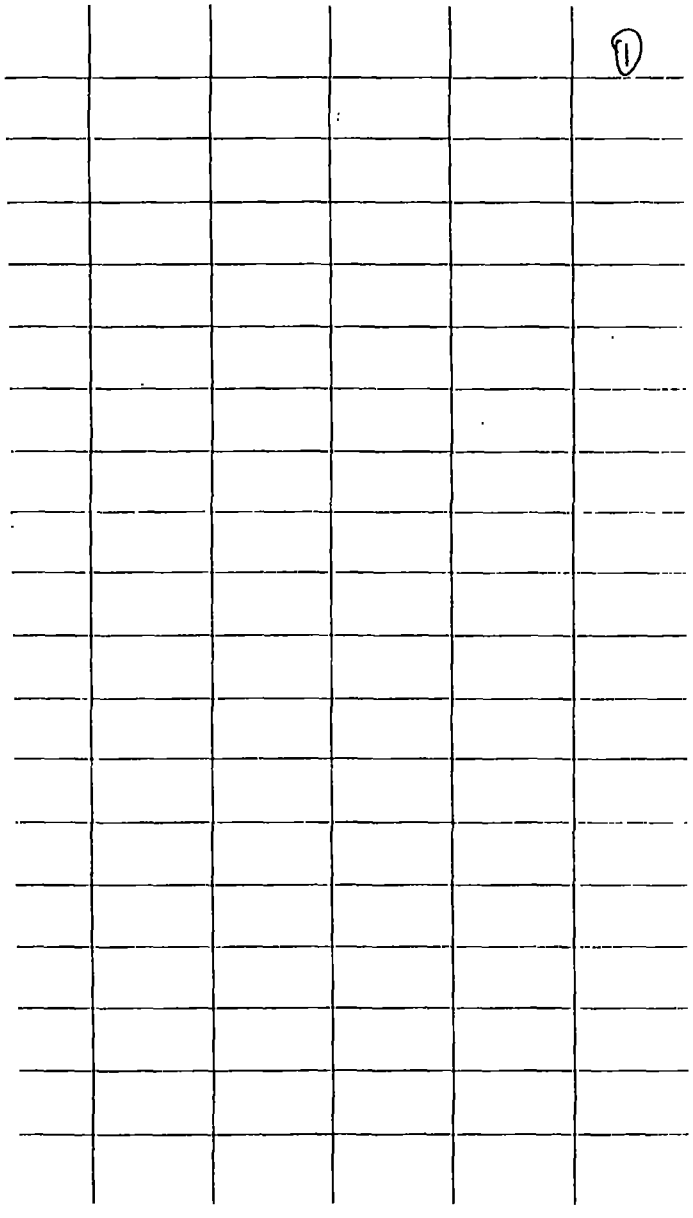
LEVEL BOOK

Mound Street PCB

St Louis, MO

Cercle ID No. MOMO1193682

No. 8152-50



(2) Site Recon visit - Dec 6, 1995

0700 Leave SvE Overland Park, KS office

1100 Arrive SvE St Louis office
pickup Kevin Harris

1130 Leave SvE St Louis office

1200 arrive site
began making site schematic

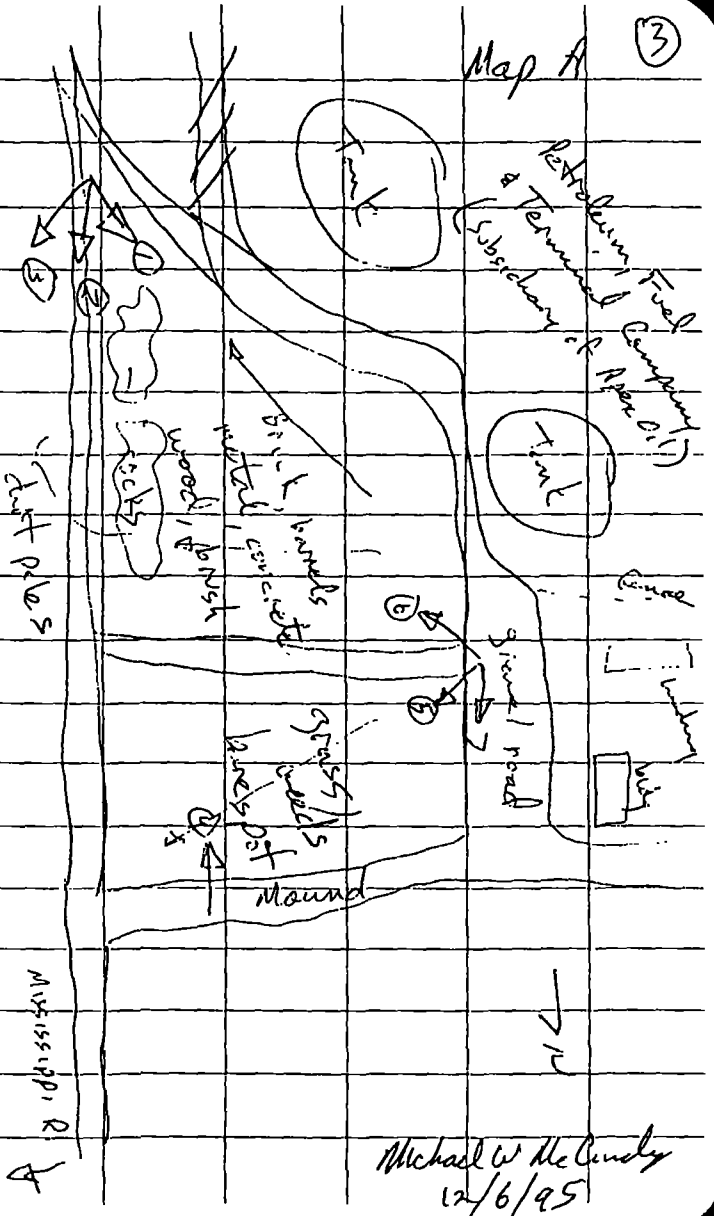
1215 Herman arrives at site
interview him (McKinley Iron rep)

1230 Herman left site

temperature 30's
mostly cloudy, slight breeze

Michael W McCurdy
12/6/95

(3) Map A



Michael W McCurdy
12/6/95

(4)

12:32 (1) looking north at south end of property

12:32 (2) looking north along gravel road

12:33 (3) looking NNE toward flood wall

12:34 (4) looking south at north end of property

12:35 (5) looking east from west side

12:37 (6) looking SSE from west side

12:38 (7) abandoned ground elevators to N (TRRI property)

[See map on preceeding page for picture location and viewing direction]

Michael W McCurdy
12/6/95

(5)

Herman Gallman interview 12:15-12:30

property size is approx 1.5 acres

basement may be as deep as 17-14'

demo into the basement — don't know if removed concrete wall or floor

deeded abandoned pump house to city for bike path

own since property east of site (between gravel road & flood wall)

property originally purchased from UE for salvage of equipment

no other operations conducted at the site

Michael W McCurdy
12/6/95

(6)

general drainage is to the east & south east

(1) looking east from gravel road (Additional property)

(2) looking SSE from gravel road (Apex tanks)

(3) looking NNE from gravel road (

(11) looking north along flood wall - pump station (MSD)

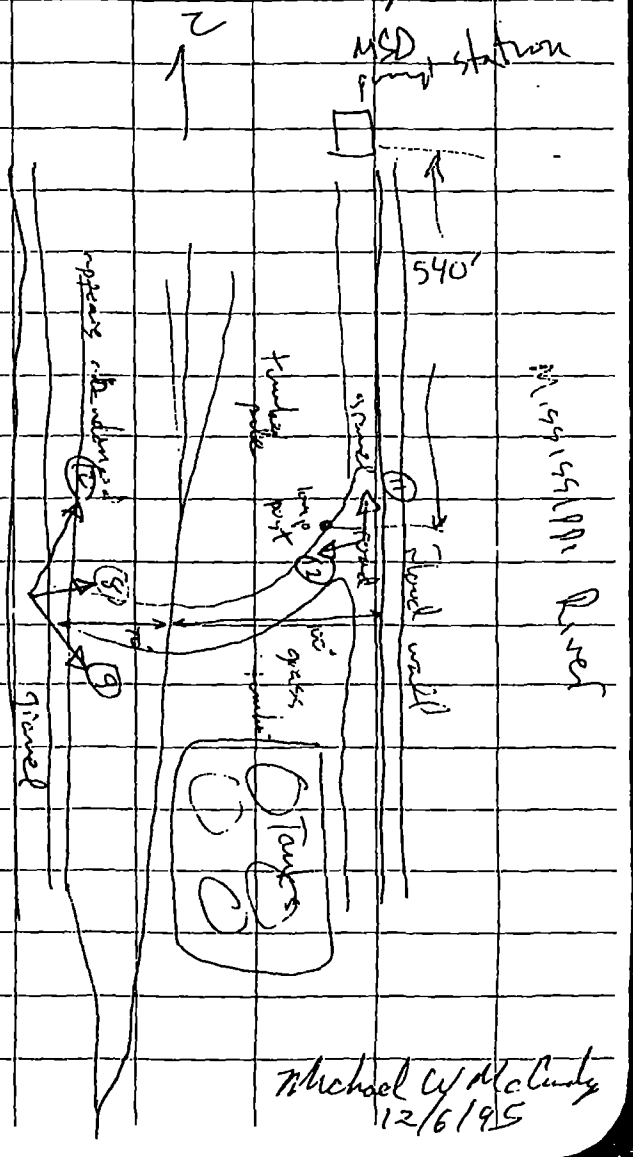
(12) looking west toward site

[See map on following page for picture location and viewing direction]

Michael W McCurdy
12/6/95

(7)

Map B



Michael W McCurdy
12/6/95

(8)

could not locate RW 12 & 11 from Corps map

Found identified MHs from corps map

"E" MH abandoned

other MH abandoned

Inlet F of Corp map is for surface runoff - some runoff from site may enter this storm drain - however, it appears most surface runoff would travel east & south

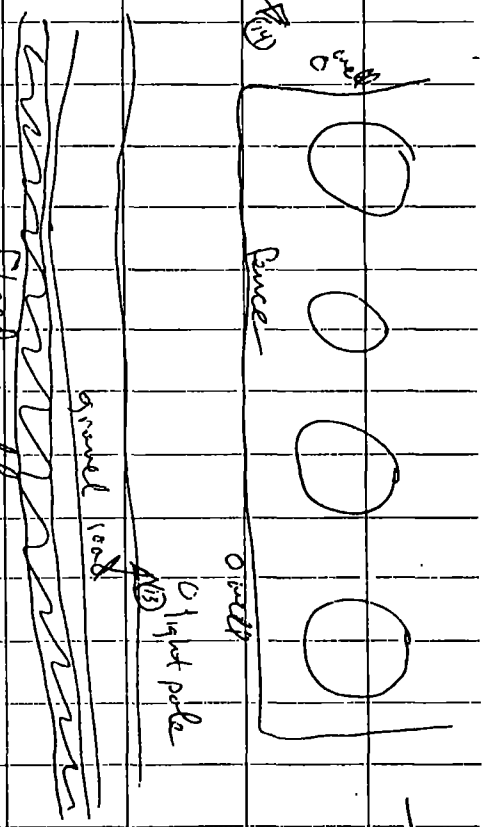
noted a dog in the Petroleum Fuel & Terminal main yard

Michael W McCurdy
12/6/95

12:58 (13) looking west at well

12:59 (14) looking NNW at well

Map C (9)



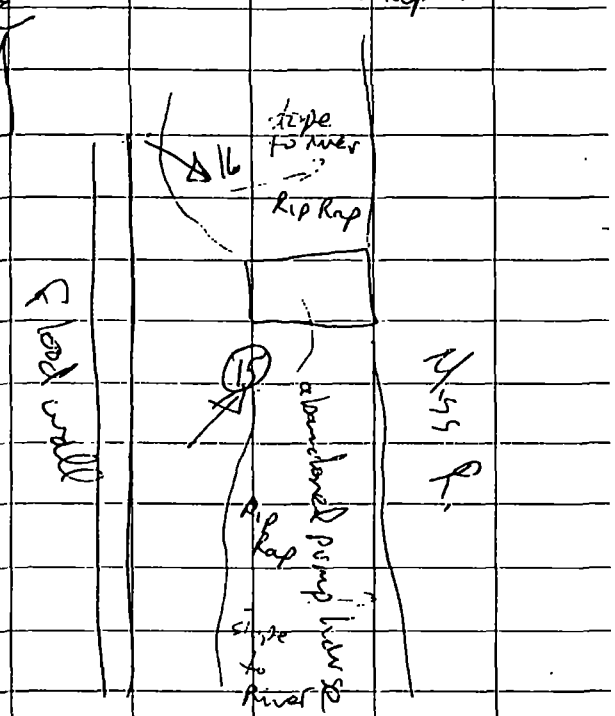
Michael W McCurdy
12/6/95

(10)

Michael W McCurdy
12/6/95

(11)

Map D



12:07 (15) looking nne at abandoned pump house

12:09 (16) looking sse at abandoned pump house

Michael W McCurdy
12/6/95

(12)

13:20 leave site

13:55 arrive SvE St Louis Office
drop off Kevin Harris

14:00 leave SvE St Louis Office

15:30 arrive SvE Overland Park, KS
office

Michael W McCurdy
12/6/95

(13)

Michael W McCurdy
4/1/96

Reference 23

REMEDIAL PLANNING ACTIVITIES AT SELECTED UNCONTROLLED HAZARDOUS SUBSTANCE DISPOSAL SITES IN THE ZONE OF REGIONS VI, VII, AND VIII

U. S. EPA CONTRACT NO. 68-W9-0032

FIELD SAMPLING PLAN

MOUND STREET PCB SITE
ST. LOUIS, MISSOURI

Revision 1

Work Assignment No.: 37-7JZZ

March 4, 1996

Prepared for:
U.S. Environmental Protection Agency

Prepared by:
Sverdrup Corporation, Inc.
4400 College Boulevard, Suite 160
Overland Park, Kansas 66211

Reference 24

SOKKIA™

LEVEL BOOK

MOUND STREET PCB

ST LOUIS, MO

CERCLIS ID No. MO0000093682

No. 8152-50

(14)

Michael W McCurdy
4/1/96

(15)

Site visit - sample collection

April 1, 1996

1100 leave SVE Overland Park, KS

1600 arrive SVE St Louis
pick up equipment

April 2, 1996

0700 leave Liverpart for site

0730 arrive site

Sunny day, 70°
windy

Michael W McCurdy 4/2/96

(16)

Michael W McCurdy
4/2/96

(17)

0730 M. May calibrate HnU

M. McCurdy calibrate
.2 L samplers + size Grams

E&E personnel on-site
Scott Hayes
Andy Mazzeo
Randy Schadamann

A.r sampling pumps
M. May - PCB (low flow)
R. Schademann - metals (yellow)
A. Mazzeo - VOC

Michael W McCurdy
4/2/96

(18)

EdE personnel will be operating the geoprobe and decon of equipment

M. May to log holes
see boring logs

M. May & M. McCurdy to collect samples

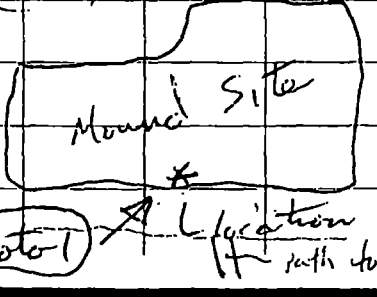
Photo 1 - Probe Point 1

Michael W. McCurdy
4/2/96

(19)

850 water level measurement at south well - depth at 29.85' *
casing height 3.25'
depth = 26.60'
* top of casing - west side

915 Geoprobe setup
dummy probe to see what to expect -
hammering required
water in last section
depth at 18'

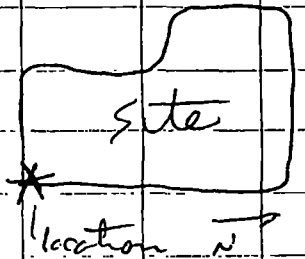


(20)

(21)

930 Sampling tube pushing
hit solid at 18.5'
water in sample tube
- concrete, brick in tube
- no reading on HNu
no sample
move to corner - south
hole backfilled with grout
not enough water to collect

955



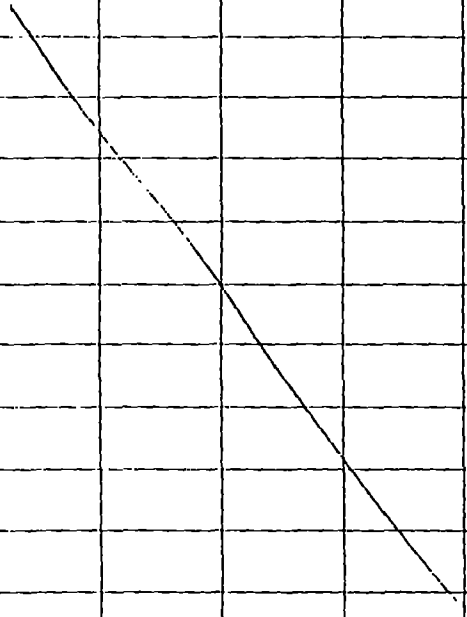
solid at 19.5'
possibly old asphalt
road layer in 0-3'

Michael W. McCurdy
4/2/96

Michael W. McCurdy
4/2/96

(22)

Photo 2 – Sample 101



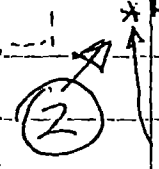
Michael W McCurdy
4/2/96

(23)

1005

(Apart)

site



N

Probe Point 2

sample at 17-19' 101 none

~~Sample at none~~

hit solid at 20'

moved over 1½' for

second aliquot at

17-19 feet

Sample 101

Michael W McCurdy
4/2/96

(24)

Photo 3 - abandoned area
debris, rock & concrete
encountered -
no sample collected

Michael W McCurdy
4/2/96

(25)

1105

(3) → (A)

refusal at ~4'
refusal at ~1'
refusal at ~1'

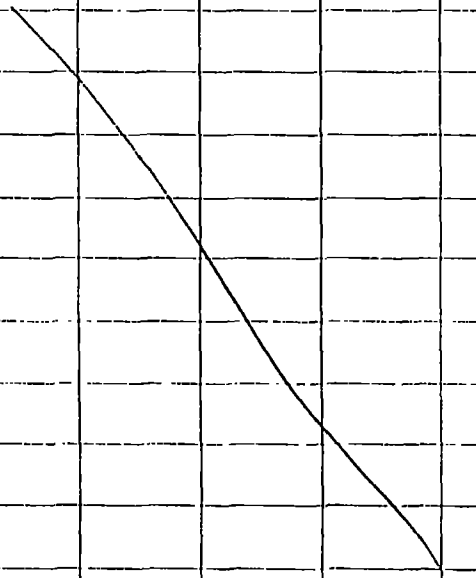
(A) refusal at 16'
refusal at 14'
attempt sample 10-12
sample collected 2-3"
retrieval - concrete core
no soil

no sample collected

Michael W McCurdy
4/2/96

(26)

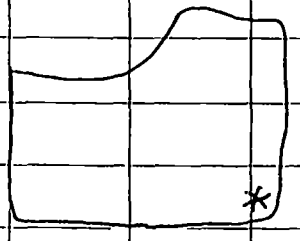
Photo 4 - abandoned area
no sample collected
rock & debris



Michael W. McCurdy
4/2/96

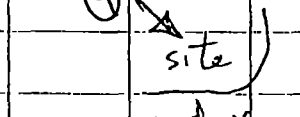
(27)

1215



refusal at 15'
refusal 12-14 sample
bricks, gravel
~ 6" sample retrieval
moved east to middle of
road

(4)



site
and *
~ 6" sample
rock gravel
minor sand
no sample

(28)

** Stated only one sample was collected at the former building location. We were going to move to the vacant area between the flood wall & site to collect the remaining samples. Requested Dave leave a message on my voice mail at 663-2108.

Michael W McCurdy
4/2/96

(29)

1307 pack trucks for lunch

1330 leave for lunch
Message with Dave Crawford at EPA *

14:10 arrive site
calibrate sampling pumps

* Stated we had attempted sample collection at the former building location & were having difficulty collecting samples due to concrete, brick & rock in the subsurface.
** (previous page)

Michael W McCurdy
4/2/96

(30)

Photo 5 – Sample 103

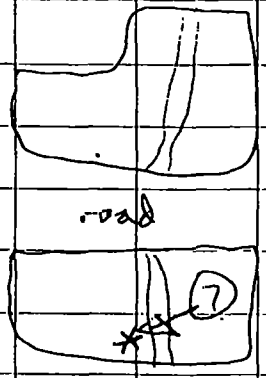
Photo 6 – Sample 103

Photo 7 – location of geoprobe boring for 102/103

Michael W McCurdy
4/2/96

(31)

14:20



sample 16 – 18' attempt rock

	sample #	Rinse
sample 18 – 20'	102	none
sample 25' – 27'	103	none

refusal at 27'

both samples submitted

Michael W McCurdy
4/2/96

(32)

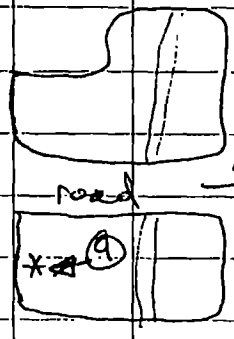
Photo 8 - sample 100

Photo 9 - location of 100 & 100D

Michael W McCurdy
4/2/96

(33)

1530



	Sample #	Hrs
Sample 25-27	100	none
Sample 25-27	100D	none

didnot go beyond 27'

1610 Equipment rinsate from decontaminated sample tube after 100 soil - sample No. 008

Michael W McCurdy
4/2/96

(34)

Michael W. McCurdy
4/2/96

(35)

1700 E&E personnel leave site

1715 S&E personnel leave site

1930 Message from Dave Crawford that there is not much else to do except move to the vacant area for the samples. No need to call in morning, but he will be in if needed.

Michael W. McCurdy
4/2/96

April 3, 1996

0700 Equipment pickup
peristaltic pump works on AC when plugged in

0830 Arrive site
E&E already present

Randy Schademann
Scott Hayes
Andy Mazzeo
} E&E already on-site

Sunny day, 70°F
windy

Michael W McCurdy
4/3/96

Michael W McCurdy
4/3/96

(38)

Photo 10 - South of site

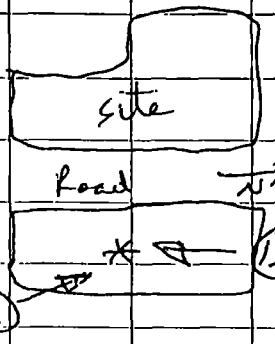
Photo 11 - Sample 104 location

Photo 12 - Sample 104 location

Michael W McCurdy
4/5/96

(39)

840



	Sample	HNU
Sample 25'-27'	104	none

930 Randy to hotel to pick up shipped pump
Mike May to call Wally to deliver another pump

Michael W McCurdy
4/5/96

(40)

Michael W McCurdy
4/2/96

(41)

845 Water sample From south well

plug in pump to battery on truck - pump does not work

E&E pump to arrive this morning

915 Field Blank 003

calibrate YSI meter pH only

Michael W McCurdy
4/3/96

(42)

Photo 13 - Equipment for well sampling Water level meter, YSI & pump at North well

Photo 14 - Sampling of north well

Note:

pumping nearing the maximum range of the peristaltic type pump south well pump TAT Engineering Model 410-660B Series A-93

(43)

1010 Randy & Mike return with E&E pump

1020 South well

top of casing 29.32'

casing height 3.25'

water level 26.07 bgs

well depth 49.31

casing height 3.25

bottom of well 46.06 bgs

37' Tubing

1040 pumping began south well

	T °C	Conductivity	pH	
1044	~~20.6~~ 19.2	0.948	6.84	initial
1055	19.5	0.880	6.98	petro sheen
1106	19.8	0.936	6.95	"
1122	19.9	0.935	6.98	"

pump rate is approximately 0.05 gpm

Michael W McCurdy 4/5/96

(44)

Photo 15 - South well

Photo 16 - South well

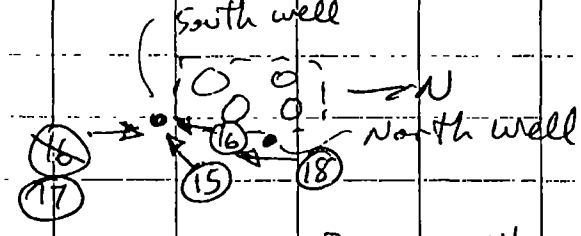


Photo 17 - From south well looking toward north well

Photo 18 - From north well looking toward south well

Michael W McCurdy
4/3/96

(45)

1128 South well

top of casing 29.58 ft

sample began 0011

0011D

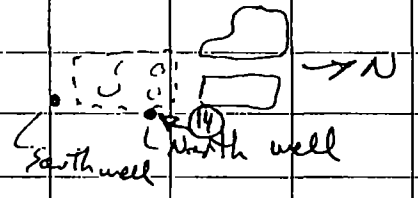
approximately 1.4 gallons removed during purging

water appears clear, no visible sediment or suspended matter, slight petroleum odor

Michael W McCurdy
4/3/96

(46)

Photo 13 - Pump & YSI setup at North well



Note: purging near the limit of the peristaltic type pump

Photo 14 - North well

Michael W McCurdy
4/3/96

(47)

1130 North well

top of casing 28.43 north side
casing height 3.75
water level 24.68 bgs

well depth 51.02
casing height 3.75
well bottom 47.27 bgs

39' tubing

1148 pumping at north well

	T °C	conductivity	pH	
1152	18.6	.963	6.75	muted
1203	18.8	.958	6.80	clear, no solids
1214	19.7	.963	6.78	"

pumping rate is approx. 0.06 gpm

Michael W McCurdy 4/3/96

(48)

North well water -
appears clear
no visible suspended
matter or sediment
slight petroleum odor

Michael W McCurdy
4/3/96

(49)

1215 to north well
top of casing 28.54

sample began 002
approx. 1.4 gallons removed by purge

1245 sample north well
completed

1310 switch pumps at ~~north~~ south well

1335 sampling 001/0010
completed

Michael W McCurdy
4/3/96

(50)

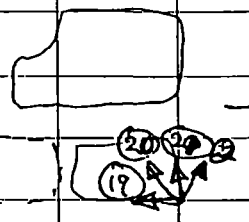


Photo 19 - Sampled area
Photo 20 - Sampled area
Photo 21 - Sampled area
Photo 22 - Sampled area

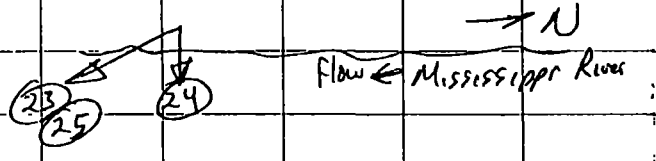


Photo 23 - Mississippi River
Photo 24 - Water intake on IL
Photo 25 - Mississippi River

Michael W McCurdy
4/3/96

(51)

1345 leave site

1445 arrive SVE St Louis office
drop off equipment

1515 leave SVE St Louis Office

2015 arrive SVE overland park

Michael W McCurdy
4/3/96

(52)

(53)

April 4, 1996

10:30 Deliver samples to EPA at Funston Rd in Kansas City, KS

11:30 Arrive EPA

End of Log Book

Michael W McCurdy
4/4/96

Michael W McCurdy
4/4/96

DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833
27 November 1995

REPLY TO
ATTENTION OF:
Engineering Division
Geotechnical Branch

Reference 25

Mr. Mike May
Sverdrup Environmental, Inc.
4400 College Blvd., Suite 160
Overland Park, KS 66211

RE: Request for monitoring well maps, analytical data, well installation data, Mound Street PCB site, St. Louis, MO; Sverdrup Project No. 010865-37303

Dear Mr. May:

As you requested, please find enclosed maps of the construction of the St. Louis Floodwall, Reach 3, which contains Mound Street PCB site.

Please note that there are no relief wells indicated parallel with your site, the nearest wells are located to the north of Mound Street. I have not been able to locate any additional relief well information for the site area. Also, please note that there are a few manholes parallel with your site. These might be mistaken for relief wells. I have enclosed construction details of these manholes.

The sponsor, St. Louis Metropolitan Sewer District, has maintenance responsibility for the relief wells and manholes along the floodwall.

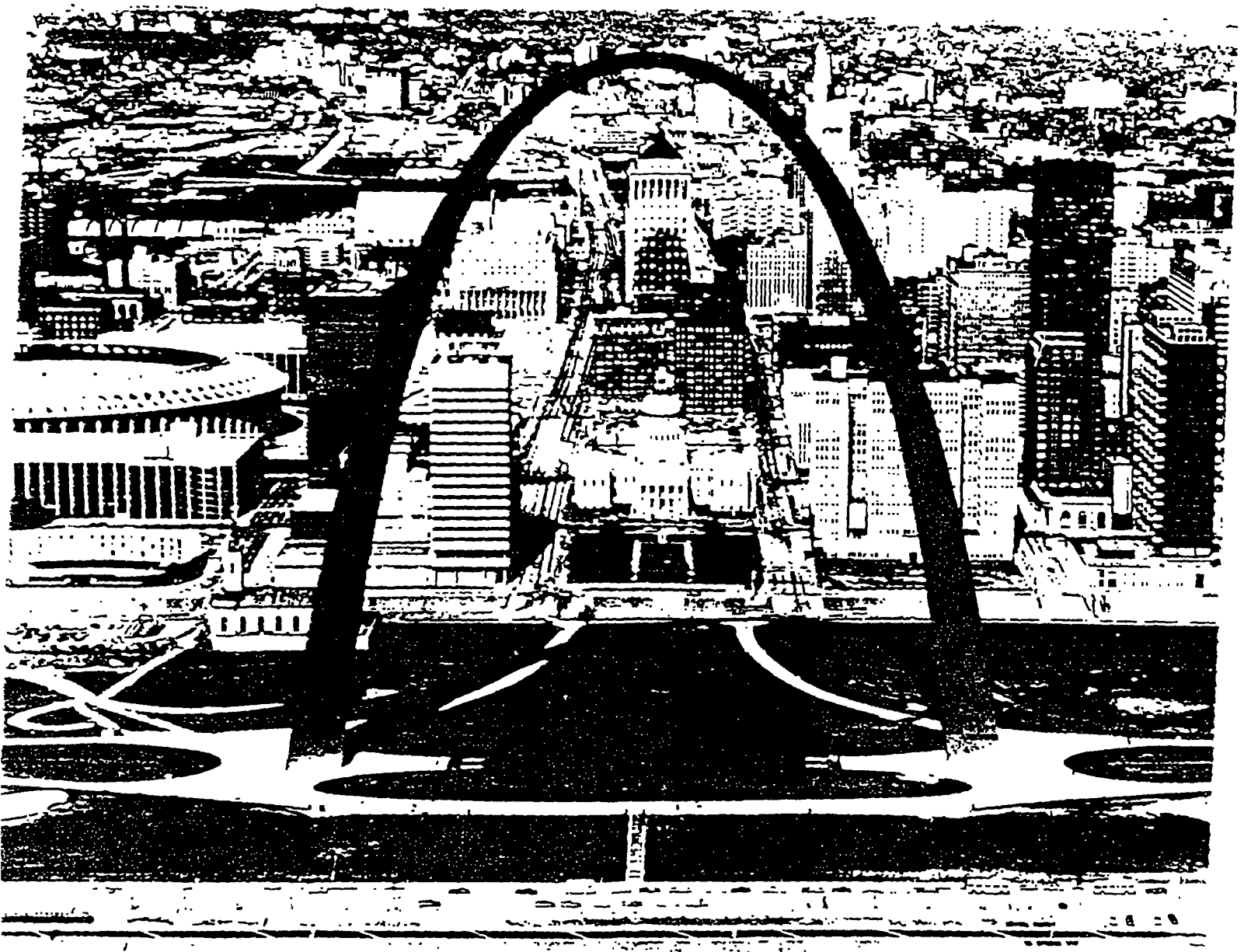
If you require additional information of the St. Louis Floodwall, please call me at (314) 331-8444.

Catherine W. Fox
Geology Section

Soil survey of

St. Louis County and St. Louis City, Missouri

Reference 26



United States Department of Agric
Soil Conservation Service
In cooperation with
Missouri Agricultural Experiment S

U.S. Department of Commerce
Economics and Statistics Administration
BUREAU OF THE CENSUS

CENSUS '90

1990 CPH-1-27

1990 Census of Population and Housing

Summary Population and Housing Characteristics

Missouri

Reference 27

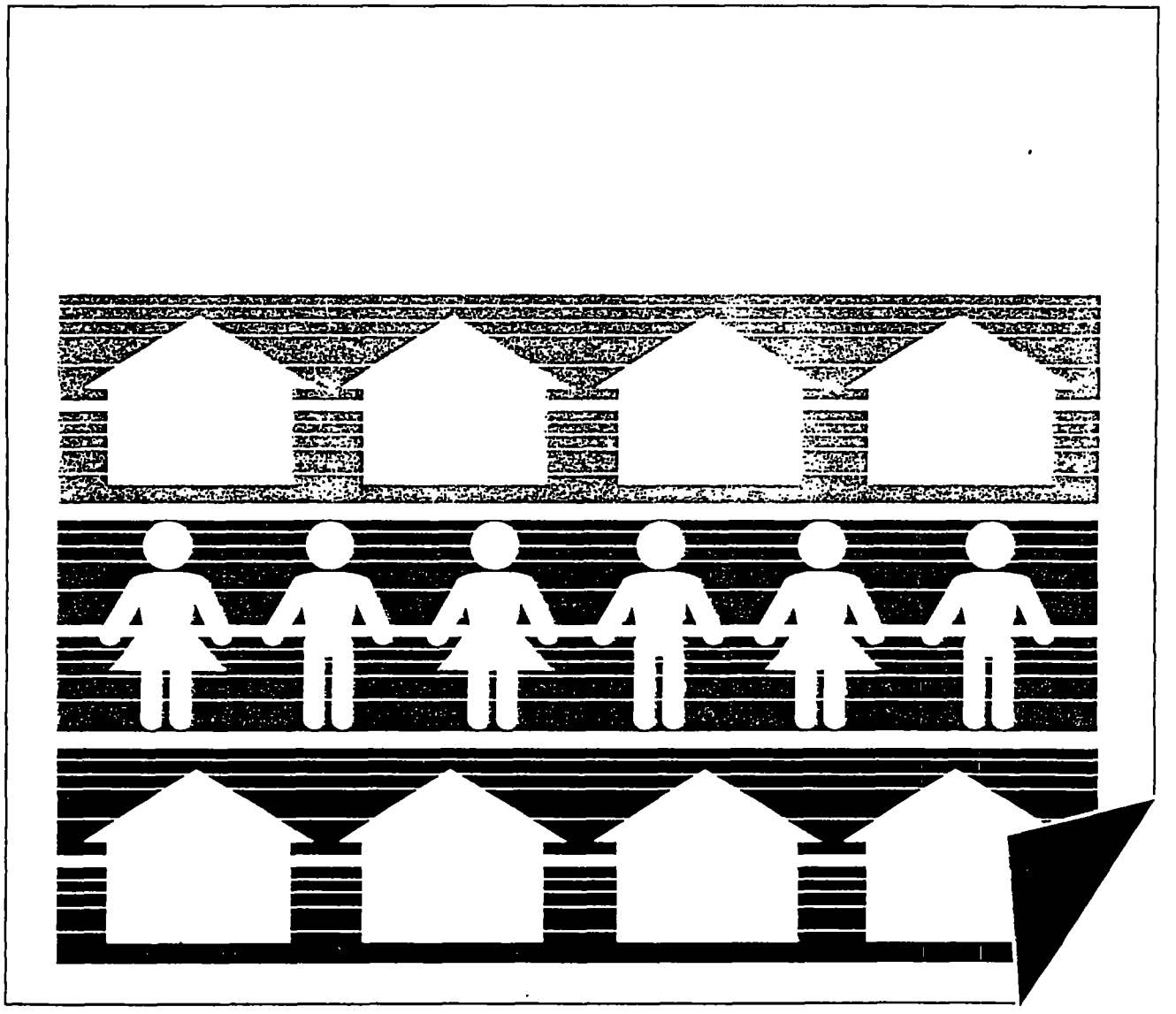


Table 5. Household, Family, and Group Quarters Characteristics: 1990—Con.

[For definitions of terms and meanings of symbols, see text]

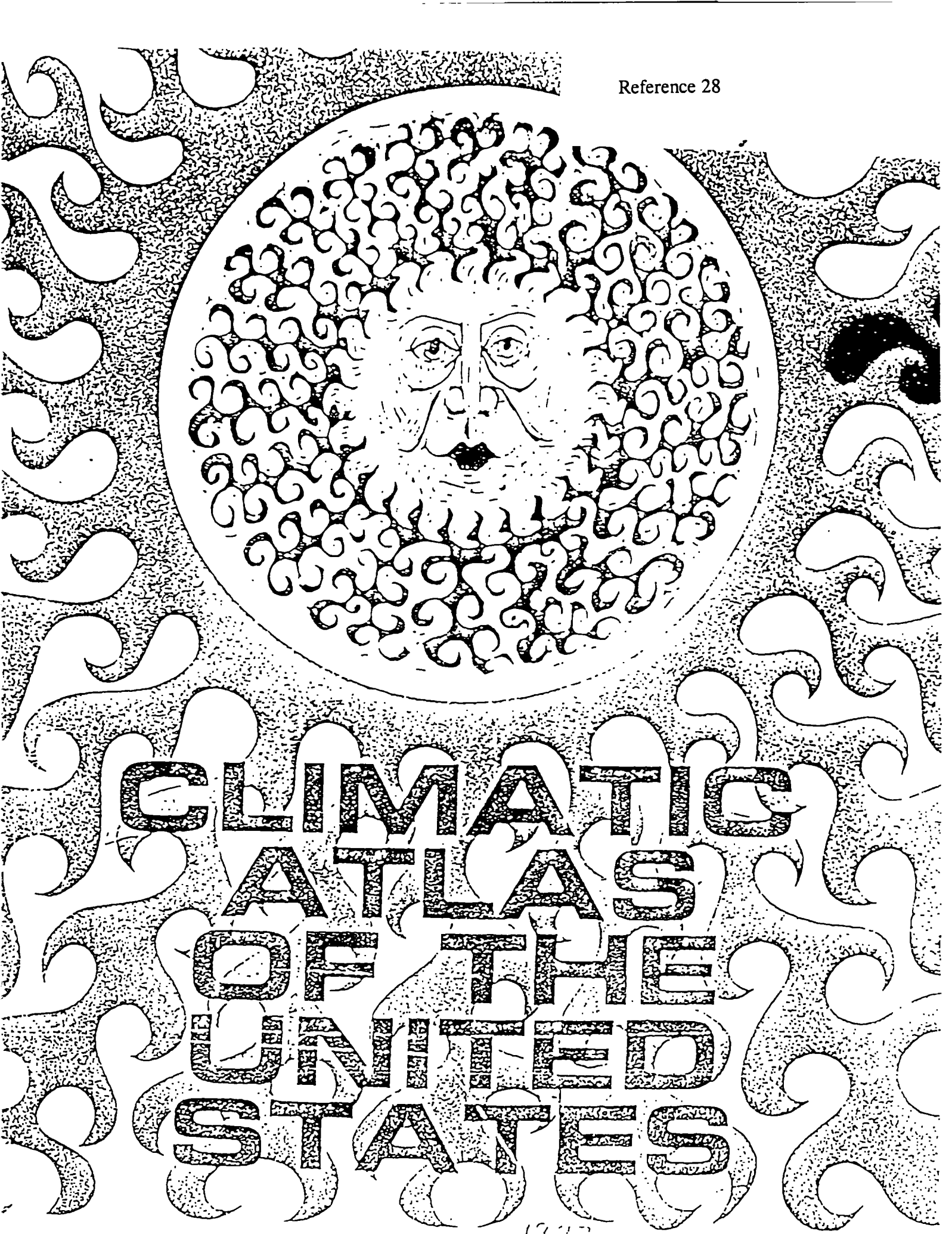
State County County Subdivision Place	Persons in households	All households	Family households			Nonfamily households				Persons per—		Persons in group quarters		
							Householder living alone							
								65 years and over						
			Total	Married-couple family	Female householder, no husband present	Total	Total	Total	Female	Household	Family	Total	Institutionalized persons	Other persons in group quarters
St Charles County—Con														
Zumbehl township	11 415	4 480	3 000	2 489	382	1 480	1 219	232	185	2.55	3 17	181	170	11
St Charles city (pt.)	7 947	3 359	2 048	1 679	271	1 311	1 092	203	160	2.37	3.08	181	170	11
St Peters city (pt)	4	1	1	1	–	–	–	–	–	4.00	4 00	–	–	–
St. Clair County	8 267	3 499	2 441	2 148	222	1 058	986	608	478	2.36	2.88	190	190	–
Appleton township	1 516	666	419	364	49	247	232	155	130	2.28	2 96	68	68	–
Appleton City city	1 212	562	331	281	44	231	218	147	124	2 16	2 89	68	68	–
Butler township	1 249	547	363	306	41	184	167	114	93	2.28	2.81	96	96	–
Lowry City city	627	297	172	132	32	125	115	93	79	2 11	2.75	96	96	–
Center township	203	77	60	51	3	17	15	7	3	2 64	2.98	–	–	–
Chalk Level township	150	58	44	38	4	14	12	6	5	2 59	3 02	–	–	–
Collins township	604	236	182	156	22	54	50	28	25	2 56	2.98	–	–	–
Collins village	144	60	39	30	9	21	21	17	16	2 40	3.13	–	–	–
Dallas township	326	129	102	94	4	27	25	12	10	2.53	2 88	–	–	–
Gerster town	40	16	10	9	–	6	6	2	2	2.50	3.30	–	–	–
Doyal township	496	203	149	139	8	54	52	28	18	2.44	2 94	–	–	–
Vista village	50	24	17	17	–	7	7	4	3	2.08	2 53	–	–	–
Jackson township	260	114	80	76	3	34	30	17	11	2.28	2 75	–	–	–
Monegaw township	285	106	85	80	3	21	19	11	10	2.69	3 07	–	–	–
Osage township	204	80	62	56	4	18	15	6	5	2 55	2 94	–	–	–
Osceola township	1 403	650	403	335	57	247	238	153	118	2.16	2 81	26	26	–
Osceola city	729	387	197	155	40	190	187	127	101	1.88	2.68	26	26	–
Polk township	179	76	59	52	4	17	17	9	7	2 36	2.73	–	–	–
Roscoe township	503	211	162	147	10	49	47	27	18	2.38	2 75	–	–	–
Roscoe village	100	46	32	28	3	14	14	7	6	2 17	2.56	–	–	–
Speedwell township	437	177	137	127	7	40	35	18	13	2.47	2.80	–	–	–
Taber township	212	78	59	56	2	19	19	11	7	2.72	3.27	–	–	–
Washington township	240	91	75	71	1	16	12	6	5	2.64	2.87	–	–	–
Ste Genevieve County	15 792	5 707	4 416	3 878	374	1 291	1 153	625	476	2 77	3.21	245	181	64
Beauvois township	1 723	600	465	405	39	135	119	69	50	2.87	3 35	49	–	49
St. Mary city	412	174	111	80	20	63	58	34	25	2.37	3.02	49	–	49
Jackson township	2 629	936	747	672	50	189	166	85	60	2 81	3.19	–	–	–
Bloomsdale city	353	142	102	92	5	40	39	28	23	2 49	3.04	–	–	–
Ste Genevieve township	8 524	3 154	2 375	2 064	230	779	707	392	317	2 70	3.19	183	181	2
Rocky Ridge village (pt.)	56	29	19	19	–	10	9	4	2	1 93	2.37	–	–	–
Ste. Genevieve city	4 364	1 793	1 212	989	183	581	536	308	260	2.43	3.04	47	47	–
Saline township	887	311	252	230	14	59	54	30	19	2 85	3 21	–	–	–
Union township	2 029	706	577	507	41	129	107	49	30	2 87	3 18	13	–	13
Rocky Ridge village (pt)	306	127	93	83	6	34	26	9	4	2 41	2.76	–	–	–
St Francois County	45 725	17 670	13 101	10 871	1 788	4 569	4 084	2 225	1 809	2.59	3.04	3 179	2 832	347
Big River township	1 435	550	433	379	36	117	88	45	34	2 61	2 90	–	–	–
Iron township	2 899	1 105	830	686	117	275	252	161	123	2 62	3.06	22	11	11
Bismarck city	1 557	604	441	355	69	163	152	104	83	2.58	3 06	22	11	11
Iron Mountain Lake city	632	240	174	141	28	66	60	35	23	2 63	3 11	–	–	–
Liberty township	1 482	546	450	409	27	96	93	50	30	2 71	3.04	–	–	–
Marion township	1 495	537	443	403	27	94	70	23	12	2 78	3 03	–	–	–
Pendleton township	2 255	823	654	565	64	169	150	84	47	2.74	3.10	83	59	24
Perry township	7 499	2 882	2 193	1 865	251	689	621	379	310	2.60	3 02	111	100	11
Bonne Terre city	3 819	1 474	1 037	819	180	437	405	264	228	2 59	3.17	52	41	11
Flat River city (pt.)	–	–	–	–	–	–	–	–	–	–	–	59	59	–
Leadwood city (pt)	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Randolph township	8 841	3 297	2 536	2 092	361	761	669	375	310	2.68	3.10	–	–	–
Desloge city (pt)	3 714	1 461	1 074	881	155	387	340	185	153	2.54	3 01	–	–	–
Elvins city (pt)	1 137	417	324	262	56	93	85	49	39	2.73	3 13	–	–	–
Flat River city (pt.)	32	13	12	11	1	1	1	1	1	2 46	2 58	–	–	–
Leadwood city (pt.)	1 247	448	358	282	62	90	84	52	45	2 78	3 17	–	–	–
Rivermines village (pt.)	62	24	20	16	2	4	3	2	2	2.58	2 80	–	–	–
St Francois township	19 819	7 930	5 562	4 472	905	2 368	2 141	1 108	943	2 50	3 03	2 963	2 662	301
Desloge city (pt)	331	130	101	85	13	29	27	8	7	2.55	2.95	105	105	–
Elvins city (pt)	254	94	68	52	12	26	18	10	8	2.70	3 21	–	–	–
Esther city	1 071	422	294	210	69	128	116	63	58	2.54	3 07	–	–	–
Farmington city	8 927	3 749	2 522	2 079	378	1 227	1 136	610	522	2 38	2 98	2 671	2 557	114
Flat River city (pt)	4 717	1 871	1 286	961	278	585	530	297	258	2 52	3.08	15	–	15
Leadington city	201	90	60	44	15	30	29	10	7	2 23	2 73	–	–	–
Rivermines village (pt.)	345	120	90	71	12	30	24	14	10	2.88	3 31	52	–	52
St. Louis County	975 815	380 110	270 421	219 468	40 657	109 689	93 532	35 078	28 674	2.57	3 10	17 714	12 586	5 128
Airport township	33 097	13 211	8 751	5 797	2 407	4 460	3 804	1 319	1 046	2.51	3 11	182	151	31
Bel-Ridge village (pt)	215	58	51	25	19	7	5	1	1	3 71	3 80	–	–	–
Berkeley city (pt)	10 213	3 596	2 701	1 608	910	895	769	247	190	2.84	3 31	27	16	11
Breckenridge Hills village (pt)	701	281	203	110	83	78	55	13	7	2 49	2 84	–	–	–
Bridgeton city (pt)	883	487	207	130	57	280	218	31	23	1.81	2.52	–	–	–
Cool Valley city (pt.)	6	2	1	–	1	1	1	1	1	3.00	5 00	100	100	–
Edmundson village	1 111	429	288	205	65	141	112	43	33	2.59	3.18	–	–	–
Kinloch city (pt)	2 451	788	554	167	348	234	216	123	92	3.11	3 89	–	–	–
St Ann city (pt)	11 525	5 213	3 044	2 237	628	2 169	1 868	632	508	2 21	2.89	55	35	20
St John city (pt.)	1 591	616	451	350	77	165	138	58	47	2 58	3.04	–	–	–
Woodson Terrace city	4 362	1 728	1 243	960	218	485	418	168	143	2 52	2.99	–	–	–
Bonhomme township	37 258	14 934	10 452	8 788	1 330	4 482	3 976	2 053	1 710	2.49	3 06	638	582	56
Des Peres city (pt.)	508	152	142	136	2	10	8	2	–	3 34	3 46	–	–	–
Fenton city (pt.)	3 290	1 103	955	849	74	148	128	47	32	2 98	3 23	56	56	–
Glendale city (pt)	1	1	–	–	–	1	1	–	–	1 00	–	–	–	–
Kirkwood city	27 002	11 212	7 583	6 355	987	3 629	3 205	1 572	1 320	2 41	3 00	289	239	50
Sappington CDP (pt)	572	184	170	159	8	14	11	5	4	3 11	3.20	–	–	–
Sunset Hills city (pt.)	4 207	1 744	1 188	1 062	100	556	514	367	313	2.41	3 01	132	126	6
Clayton township	33 996	13 708	9 848	8 601	968	3 860	3 400	1 499	1 223	2.48	2 99	891	735	156
Clayton city (pt.)	7 776	3 987	1 945	1 571	290	2 042	1 741	622	523	1.95	2 75	304	304	–
Creve Coeur city (pt.)	1 666	601	513	480	21	88	74	28	22	2.77	3 03	309	218	91
Crystal Lake Park city	506	209	158	139	18	51	43	22	20	2 42	2 82	–	–	–
Des Peres city (pt.)	4 676	1 671	1 412	1 278	108	259	229	121	91	2 80	3 09	102	102	–
Frontenac city	3 266	1 226	1 033	953	56	193	176	85	67	2 66	2 94	108	70	38
Glendale city (pt.)	117	52	32	26	5	20	15	10	7	2 25	2 81	–	–	–
Huntleigh city	392	132	118	109	7	14	14	10	10	2.97	3 16	–	–	–
Ladue city (pt)	6 990	2 651	2 166	1 987	136	485	452	249	209	2 64	2 97	–	–	–
Rock Hill city (pt)	4 260	1 606	1 167	901	205	439	406	190	150	2 65	3 21	–	–	–
Town and Country city (pt)	1 548	515	440	415	17	75	72	46	28	3 01	3 33	68	41	27
Warson Woods city (pt)	2 049	773	646	592	47	127	120	86	72	2 65	2 96	–	–	–
Webster Groves city (pt)	433	154	114	52	56	40	36	22	17	2 81	3 36	–	–	–
Westwood village	309	129	103	97	2	26	22	8	7	2 40	2 66	–	–	–

Table 5. Household, Family, and Group Quarters Characteristics: 1990—Con.

[For definitions of terms and meanings of symbols see text]

State County County Subdivision Place	Persons in households	All households	Family households			Nonfamily households				Persons per—		Persons in group quarters		
							Householder living alone							
								65 years and over						
			Total	Married-couple family	Female householder, no husband present	Total	Total	Total	Female	Household	Family	Total	Institutionalized persons	Other persons in group quarters
Worth County—Cor.														
Middlefork township	229	89	66	59	5	23	18	13	13	2 57	3 03	–	–	–
Worth town	103	37	27	24	2	10	7	5	5	2 78	3 33	–	–	–
Smith township	183	81	57	50	6	24	22	14	7	2 26	2.70	–	–	–
Allendale town	58	32	16	14	2	16	15	11	5	1.81	2 44	–	–	–
Union township	485	215	146	131	7	69	65	46	37	2 26	2.80	–	–	–
Sheridan town	174	91	49	44	4	42	42	34	28	1.91	2 67	–	–	–
Wright County	16 558	6 510	4 725	4 059	518	1 785	1 679	998	780	2 54	3 06	200	199	1
Boone township	893	321	255	227	21	66	58	26	21	2.78	3.20	–	–	–
Brush Creek township	510	177	143	127	12	34	32	13	10	2 88	3 26	–	–	–
Clark township	1 061	400	310	261	34	90	86	56	44	2 65	3 09	–	–	–
Norwood city (pt)	389	151	106	86	18	45	43	30	26	2 58	3 19	–	–	–
Elk Creek township	382	155	122	106	9	33	29	14	11	2 46	2.80	–	–	–
Gasconade township	1 051	381	292	256	26	89	81	46	32	2 76	3 22	–	–	–
Hartville city (pt)	108	48	29	23	5	19	17	12	9	2 25	3 00	–	–	–
Hart township	1 061	452	292	256	28	160	154	111	87	2 35	3 03	7	7	–
Hartville city (pt.)	380	206	93	70	18	113	112	86	68	1 84	2 83	7	7	–
Montgomery township	533	189	154	134	15	35	34	16	12	2.82	3 14	–	–	–
Mountain Grove township	5 569	2 382	1 575	1 292	236	807	767	466	376	2.34	2 95	129	129	–
Mountain Grove city (pt)	4 141	1 860	1 158	916	208	702	667	416	341	2 23	2 89	27	27	–
Norwood city (pt)	60	26	17	15	1	9	9	4	3	2.31	3.00	–	–	–
Pleasant Valley township	2 638	1 011	730	619	94	281	258	156	120	2 61	3 15	64	63	1
Mansfield city	1 428	587	376	298	70	211	194	125	103	2.43	3 14	1	–	1
Union township	1 045	393	314	285	19	79	77	46	36	2.66	3 04	–	–	–
Van Buren township	550	194	154	144	5	40	37	16	12	2 84	3 25	–	–	–
Wood township	1 265	455	384	352	19	71	66	32	19	2 78	3 03	–	–	–
Mountain Grove city (pt)	7	1	1	1	–	–	–	–	–	7 00	7 00	–	–	–
St Louis city	385 916	164 931	90 945	50 557	33 864	73 986	64 677	26 519	20 788	2.34	3.21	10 769	5 900	4 869

Reference 28



CLIMATIC ATLAS OF THE UNITED STATES

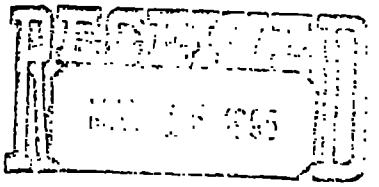
1973

ntal Science Services Administration — Environmental Data S

Reference 29

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY, KANSAS 66115



DATE: May 3 1996

SUBJECT: Data Transmittal for Activity #: DCICY
Site Description: Mound Street PCBs

FROM: Andrea Jirka, Program Manager
Regional Laboratory, Environmental Services Division

TO: Dave Crawford
SUPR

Attached is the data transmittal for the above-referenced site. The data contained in this transmittal have been approved by the Regional Laboratory. This should be considered a _____ Partial or X Complete data transmittal (completes transmittal of _____). The Project Leader should notify the Regional Laboratory with 14 days of any changes in the LAST analytical database. If you have any questions, comments, or data changes, please contact Dee Simmons at 551-5129.

Attachment

cc: Analytical Data File

United States
Environmental Protection
Agency

Office of Emergency and
Remedial Response
Washington DC 20460

EPA 540-R-92-021
Directive 9345.1-05
September 1992

Superfund

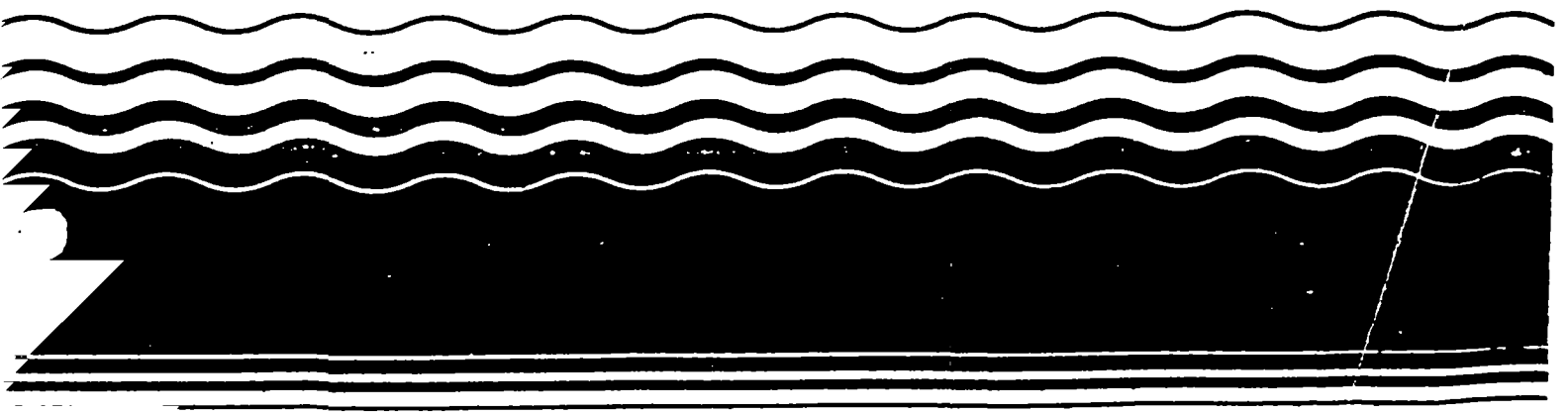
EPA

Guidance for Performing Site Inspections Under CERCLA

Reference 30

includes revised
C-33
C-44

Interim Final



United States Environmental Protection Agency
Office of Emergency and Remedial Response Washington, DC 20460
Publication September 1995
Superfund

EPA

Superfund Chemical Data Matrix

Reference 31

EPA540-R-92-026
OSWER Directive 9345.1-07
November 1992

Reference 32

The Hazard Ranking System Guidance Manual

Interim Final

Hazardous Site Evaluation Division
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460

federal register

Friday
December 14, 1990

Reference 34

Part II

Environmental Protection Agency

40 CFR Part 300
Hazard Ranking System; Final Rule